

E-GOVERNMENT, DEVELOPMENT AND EVOLUTION

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ABSTRACT: 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. Thus, governments worldwide pursue e-government solutions, which are particularly relevant for themselves and their stakeholders.

KEY WORDS: interoperability, e-government solutions, information technology, development, digitalization

1. INTRODUCTION

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 [1].

As already pointed out, governments need to consider multiple stakeholder relationships when implementing e-

government. Wirtz and Piehler [2] 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 [3] 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.

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” [4]. This early assessment of 1995 clearly illustrates the far-reaching impact of digitization.

3. 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 [5]. 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, 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 [6].

According to [6], 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 enterprise² to develop a new form of organization.

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 [4].

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 breakthrough technologies, such as the steam engine, railway, or electrical engineering, this provides the impulse for the fifth Kondratiev wave.

4. 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 [7].

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.

4.1. 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 (Kleinstauber 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.

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. However, these were not supposed to be exhaustive, but would rather grow or be modified with increasing implementation and degree of maturity.

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 [8].

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. 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 [9].

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 [10].

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.

ICT Development Index (IDI), 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 [11].

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 [12].

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 [13].

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.

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 [14].

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 [15].

4.2. 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 [16].

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.

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.

So far, approximately six out of ten studies are of empirical nature. 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.

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.

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 [16].

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 them-selves 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 [7].

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