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Digital Governance as a Scientific Concept

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Abstract

The term eGovernance has been used for almost 2 decades and suggests a relationship between some electronic—or digital—aspects and governance in a traditional form. Several scholars have pointed out that eGovernance has been defined and used in a number of ways in the academic discourse. This is problematic as it may hinder the development of cumulative knowledge and robust theoretical constructs. To investigate how eGovernance has been used and understood, we reviewed the eGovernance and digital governance literature to identify the theoretical foundations and to understand variations in the use of the term. Our overall objective was to contribute to a consolidation of the understanding and use of the term. This chapter suggests that there is considerable variation in how eGovernance is understood and applied in the literature. Recently, some argued that eGovernance has evolved into the term “digital governance”. Although there seem to be more theoretical contributions related to the concept of eGovernance and the digital aspect of digital governance has been slightly more elaborated, we found no clear conceptual distinctions between the two concepts and used digital governance for our conceptualization. To provide clarity, we posit that governance and digital are basic elements of digital governance. Further, we found that digital governance is typically either studied with emphasis on the use of ICT in governance or on structural or normative transformational outcomes of digital governance. As a novel contribution, we suggest a definition of digital governance.

Keywords: eGovernance, Digital governance, Concept analysis

1. Introduction

Development of concepts is a central part of the development of a scientific discipline. Concepts enable generalization and transfer of understanding. It can clarify phenomena and create order. Development of concepts and theory are intertwined. The better the concepts are, the better theories can be developed (Khazanchi, 1996). “In essence, conceptual development provides a means of crisply defining and elaborating ideas regarding certain phenomena” (Khazanchi, 1996, p. 1).

It is fundamental that concepts are clear and understandable, and there should be a strong underlying logic and rationale behind a concept and theory. A common problem though is that concepts are often interpreted in inconsistent and ambiguous ways (Conboy, 2009). There is rarely a clear agreement on their meaning, and the IS field has even more challenges due to its continuously changing environment and technologies (Khazanchi, 1996). The management information systems (MIS) field has for instance been criticized for its lack of a

formal and consistent development, and a methodology for construct development in MIS is suggested by Lewis et al. (2005). They argue that in construct development, level of analysis and philosophical aspects with different levels of abstraction ought to be addressed (Lewis et al., 2005). Characteristics of qualities of a concept are, for instance, clarity, parsimony, possible applications of the concept, theoretical glue and whether it is cumulative (building on research in the field) (Conboy, 2009).

Concepts and theories can be native or imported. A native theory for the IS field is a theory that is developed specifically for IS phenomena, while an imported theory is borrowed from another discipline (Straub, 2012). Concepts have an important role in different ways. Wand and Weber (1988) have for instance modelled information systems based on definitions on central concepts. It is used to formalize aspects of information systems, to develop requirements for information systems, formalize the representation (of the real world) and perceived system and develop a theoretical foundation for decomposition (Wand & Weber, 1988). Information systems (IS) theories have also been categorized according to five types that provide analysis and description, explanation, prediction, explanation and prediction or prescription (design and action) (Gregor, 2006).

A scientific foundation for the digital governance field has recently been requested (Charalabidis & Lachana, 2020a, 2020b), and conceptual development is an important element of such a foundation. The digital governance concept can be seen as an evolvement of the eGovernance (electronic governance) concept (Misuraca & Viscusi, 2014). Bannister and Connolly (2012) noted a decade ago that eGovernance had so far been used with considerable elasticity in the literature and that this is unfortunate as the consequence is that there is no agreed upon definition of the term. They especially emphasized the blurred lines between eGovernance and eGovernment and suggested that the two terms were often used haphazardly in the literature.

Over the years, a number of competing or overlapping terms have been suggested and used. In addition to the already mentioned digital governance, eGovernance and eGovernment, terms such as open government (Misuraca, 2006), joined-up government (Mundkur & Venkatesh, 2009), smart governance (Alotaibi, 2019) and digital era governance (Dunleavy, 2006) have emerged in the literature. While some of these may offer nuances or distinctions adding to the existing understanding of eGovernance, our fascination for developing new terms may also inhibit us from a deep necessary understanding of the basic terms and concepts in our field of study. Nevertheless, to be certain to include both early and recent developments, we decided to study both eGovernance and digital governance.

In light of the above, we wanted to investigate if Bannister and Connolly's concerns from 2012 are valid today or if there has been a clear conceptual consolidation of the field of eGovernance and digital governance. We were specifically interested in how the literature uses the eGovernance concept, but also how governance and technology are understood, and how this has evolved into the term of digital governance.

1.1 Method

This chapter is based on a literature review. A literature review enables us to build on and extend existing knowledge, discover what is already known and stimulate further research

(Levy & Ellis, 2006). The digital governance field is a relatively young field and also an interdisciplinary field that draws on multiple theories, why literature reviews may seem to be a challenging task. Nevertheless, it is important for theory development to accumulate knowledge and for the distinctness of a field. Literature reviews can also be used to describe and analyse concepts (Webster & Watson, 2002).

This chapter is based on an inductive and interpretative study of the concepts eGovernance and digital governance. The aim of an interpretative study of concepts is to describe and interpret meanings of concepts and their definition, as it is formulated in written texts, and to formulate new definitions where it is needed (Nuopponen, 2010). The quality of an interpretative study of concepts, such as rigour and plausibility, relates to the interpretative ability of the researcher (Takala & Lämsä, 2004). The interpretation of concepts will be affected by research approach. Four types of interpretative studies of concepts have been identified: heuristic, theory oriented, descriptive and critical. This study is descriptive, as it intends to develop understanding of the meaning of the concept of eGovernance, and partly critical, in a way that it has analysed assumptions and values embedded in the definition or description of the concept (Takala & Lämsä, 2004).

Two sources have been used for this literature review; the Digital Government Reference Library—DGRL (Scholl, 2020) and Google Scholar.¹ The DGRL is a database containing more than 14 000 publications in the field of digital governance and digital government. It is maintained by the University of Washington and is publicly accessible (Scholl, 2020). Google Scholar was chosen because it is a database that has a good coverage of scientific publications. Search terms that were used in the DGRL bibliography were “eGovernance” and “e-Governance”, with the selection in title journals, and in title journals and books, and 145 articles were downloaded. Search in Google Scholar was made with the search terms “eGovernance theory” (with 21 articles selected) and “eGovernance definition” (with 13 articles selected) to focus the search on theory and conceptual definitions (a search on eGovernance in Google Scholar gave 23 800 hits which was too broad). Articles that were journal or conference publications and that were related to definitions of eGovernance were included. The articles were read briefly, and certain parameters were put into a concept matrix in an excel sheet. Next, a selection was made where articles that had a definition of eGovernance were included. A new matrix was developed. The definitions of eGovernance were then analysed, and themes were identified. The main categories drawn from this as an understanding of eGovernance were “ICT in governance/government services” and “outcomes of eGovernance”. The analysis is presented in text and tables. Finally, this was concluded with a discussion on contributions and limitations of existing concepts and understanding of eGovernance. After this, a search was made in both databases on digital governance, where 20 articles were selected from the DGRL database, and 14 articles were selected from Google Scholar. In our sample, we observed that there has been more theoretical development around the concept of eGovernance than the more recent digital governance.

2. Results

We reviewed a subset of the literature to understand its meanings. Our analysis suggests that for eGovernance, “governance” and the notion of “e” are fundamental concepts that in combination can lead to transformation of government structures, governance processes, relationships and effects. The result section is organized as follows. First, we outline different views on eGovernance. Then we explore how the literature has used governance and e as foundational constructs. Third, we outline the transformational aspects of eGovernance and discuss outcomes of eGovernance efforts. Finally, we discuss our results in light of the more recent term digital governance.

2.1 eGovernance

We identified a number of definitions of eGovernance in the literature we studied. There seems to be considerable agreement that eGovernance can affect, or for the most part, improve, governance by utilizing some form of digital technologies. However, when investigating how eGovernance has been described more closely, we identified distinct variations in what different scholars emphasize. Examples of definitions of eGovernance are presented in Table 1.

Example Definition	Emphasis	Reference
<p>”eGovernance means the utilization of internet and World Wide Web (www) for transfer of information and delivery of services from government to citizens”</p> <p>“eGovernance may be defined as the delivery of government services and information to the public by using electronic means”</p> <p>“eGovernance or electronic governance may be defined as the delivery of government services and information to the public using electronic means, including the dissemination of information to the public and other agencies. There are three aspects to e-governance: - automating the routine government functions - web-enabling the government functions so that the citizens will have a direct access - improving the government processes so that openness, accountability, effectiveness and efficiency may be achieved. In general, it may be defined as ‘giving citizens the choice of when and where to access government information and services”</p>	Use of ICT in governance/government services	<p>Din et al. (2017, p. 3)</p> <p>Barthwal (2003, p. 288)</p> <p>Akotam, Kontoh, & Ansah (2013, p. 136)</p>
”eGovernance refers to new processes of coordination which apply the advancements of information and communications technology (ICT) to governance”	Functions of governance	Pathak, Belwal, Naz, Smith, & Al-Zoubi (2010, p. 2)
“E-governance is the application of electronic means to improve the interaction between government and citizens; and to increase the administrative effectiveness and efficiency in the internal government operations. Further, it is the application of information technology to the Government processes to bring Simple, Moral, Accountable, Responsive, and Transparent (SMART) governance”	Improvements and achievement of objectives	Ramadoss & Palanisamy (2004, p. 1)

<p>“The UNESCO definition (...) is: ‘E-governance is the public sector’s use of information and communication technologies with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective. E-governance involves new styles of leadership, new ways of debating and deciding policy and investment, new ways of accessing education, new ways of listening to citizens and new ways of organizing and delivering information and services. E-governance is generally considered as a wider concept than e-government, since it can bring about a change in the way citizens relate to governments and to each other. E-governance can bring forth new concepts of citizenship, both in terms of citizen needs and responsibilities. Its objective is to engage, enable and empower the citizen”</p>		<p>Palvia & Sharma (2007, p. 3)</p>
<p>“eGovernance is a broader term (than eGovernment) that includes transformation on at least four levels. First, it involves the transformation of the business of government (e-government). Second, it involves a transformation in the operational definitions of the principles upon which governance is founded, shifting towards increased participation, openness, transparency, and communication (...). Third, it involves a transformation in the interactions between government and its (internal and external) clients (...). Finally, it involves a transformation of society itself, through the emergence of so-called “e-societies”, made up of networks of relationships like citizen-to-citizen connections, as well as relations among non-government organizations (NGOs), built and sustained using electronic means”</p>	<p>Transformation at different levels</p>	<p>Pablo & Pan (2002, pp. 289-290)</p>

Table 1: Example definitions of eGovernance

Our analysis of the different definitions of eGovernance suggests that eGovernance can be viewed in two distinct but interrelated ways:

- Use of ICT in governance/government services;
- Outcomes of eGovernance as transformations (e.g. service improvement, stakeholder involvement and participation).

These aspects are illustrated in the literature in different ways, and a synthesized understanding is depicted in Table 2.

eGovernance understanding	Description	Example references
<p>Use of ICT in governance/government services</p>	<p>ICT (or electronic means) are used in governance processes, and in provision of government information and services, utilizing the Internet and WWW. ICT enables automation and supports internal operation and external interactions.</p>	<p>Din et al., (2017); Barthwal, (2003); Bah & Mansour, (2018); Pathak et al. (2010); Khanra & Joseph (2019).</p>
<p>Outcomes of eGovernance as transformations</p>	<p>eGovernance may transform both structural and normative aspects of governance, including governance</p>	<p>Ramadoss & Palanisamy, (2004); Pablo & Pan (2002); Palvia & Sharma (2007);</p>

	<p>processes and structures, relationships between stakeholders, values, and means and methods to achieve governance objectives.</p> <p>Common objectives are to improve efficiency, effectiveness, participation, transparency, accountability, responsiveness, good governance, democracy and economic development.</p>	<p>Chen & Hsieh (2009); Akotam et al. (2013); Kalsi & Kiran (2015).</p>
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Table 2. Understandings of eGovernance

The core characteristics of eGovernance are the use of ICT or electronic means in governance processes, including government services and interaction with stakeholders (Bah & Mansour, 2018; Barthwal, 2003). Services and interactions can be performed online via the Internet (Al Athmay, 2015; Din et al., 2017) and be automated (Ray & Mukherjee, 2007) to different extent.

It is common to include aims and outcomes in definitions and descriptions of eGovernance. ICT is viewed as a means to achieve certain objectives (van der Meer & van Winden, 2003), such as improved service delivery and interaction with stakeholders (Palvia & Sharma, 2007; Ramadoss & Palanisamy, 2004; Saxena, 2005), improved transparency, accountability, efficiency and effectiveness (Akotam et al., 2013; Ray & Mukherjee, 2007), as well as increased participation of stakeholders (Misuraca, 2006; Nyirenda & Cropf, 2009), enhanced democracy (Bubou et al., 2018; Saxena, 2005) and good governance (Lal & Haleem, 2002; Misuraca, 2006; Saxena, 2005). Technologies support interactions in a networked, online context (Meijer & Bekkers, 2015) and facilitate transformation and innovation at multiple levels throughout societies. New forms of leadership, coordination, communication and collaboration may emerge.

The concepts of eGovernance and eGovernment tend to be conflated and used interchangeably. For instance, eGovernment has been defined as “the use of ICT and its application by government for the provision of information and public services to the people” (Meyerhoff Nielsen, 2016, p. 109), while others describe eGovernance with the same meaning (e.g. Barthwal, 2003; Din et al., 2017). eGovernance is sometimes interpreted as an incorporation of technology in the traditional governance concept (Larsson & Grönlund, 2016), while others emphasize that in order to be considered to be eGovernance, it has to involve a transformation (Bannister & Connolly, 2012). When eGovernance is distinguished from eGovernment, eGovernance is seen as a broader concept that involve multiple actors, not just the operation of governments. eGovernance is also different from traditional public governance (Bannister & Connolly, 2012). It includes new forms of organization and leadership, communication and decision-making (Palvia & Sharma, 2007; Rubasundram & Rasiah, 2019). Sometimes eGovernment has a structural perspective, while eGovernance is more focused on processes (Bubou et al., 2018). eGovernance has a broader scope than eGovernment and includes different actors and relationships throughout society. eGovernance involves an active use of ICT to achieve certain outcomes that can facilitate transformation at multiple levels throughout societies and also how multiple actors relate to each other and take a more active role (Misuraca, 2006).

2.2 Basic Elements of eGovernance

eGovernance consists of two basic elements: “governance” and “e”. This part of the chapter addresses how these elements are understood in the literature.

2.2.1 Governance

In the literature, governance is typically seen as a process, including steering, decision-making and policy-making. It tends to have an emphasis on relationships and how things are conducted (see Table 3 for an overview).

Governance understanding	Description	References
Steering	<ul style="list-style-type: none"> Steering Authority to steer, control, influence or lead 	Misuraca (2006) Lal & Haleem (2002)
Governance as a process	<ul style="list-style-type: none"> Governance is about processes Processes and institutions that guide and restrain activities of a group “The process through which institutions, businesses and citizens groups articulate their interests, exercise their rights and obligations and mediate their differences”. 	Misuraca (2006) Palvia & Sharma (2007) Lal & Haleem (2002, pp. 99)
Managing policies and procedures	<ul style="list-style-type: none"> Governance can be conducted in different sectors and manages policies and procedures. 	Palvia & Sharma (2007)
Decision making and implementation	<ul style="list-style-type: none"> The process by which decisions are made and implemented “The process whereby a society makes important decisions, determines whom they involve, and how they render account”. Governance refers to decision making processes in networks of public and private actors 	Akotam et al. (2013); Lal & Haleem (2002) Kalsi & Kiran (2015, p. 171) Larsson & Grönlund (2016)
Governance relates to “how”	<ul style="list-style-type: none"> Governance refers to how governments and stakeholders interact, how public functions are carried out, public resources are managed and regulation are conducted 	Kalsi & Kiran (2015)
Relationships	<ul style="list-style-type: none"> Governance is concerned with the broader relationships between citizens and public institutions. Governance include multiple stakeholders 	Misuraca (2006) Lal & Haleem (2002)

Table 3: Understandings of governance

Governance is seen as a steering process (Misuraca, 2006), the authority to steer, control, influence or lead (Lal & Haleem, 2002).

“The word governance has its origin in the Greek language and it refers to steering (...). As an act of steering a people’s development, Governance is about processes not about ends. While the study of “Government” is primarily concerned with understanding the institutional means through which public management is realized, “Governance” is concerned with the broader relationships between citizens and those institutions”. (Misuraca, 2006, p. 210)

Governance includes processes of making and implementing decisions (Finger & Pécoud, 2003; Lal & Haleem, 2002; Singla & Aggarwal, 2014), who is involved and how account is rendered (Kalsi & Kiran, 2015). Governance includes processes in which groups articulate their interests, exercise their rights and obligations and mediate their differences. It includes

“authority to steer, control, influence or lead in the management of a country’s politics, economy and administration; the making and implementation of decisions (...); encompassing the state, but transcending the state by including private sector and civil society groups. Thus governance also implies a certain set of mechanisms, processes, and structures that guide political and socio-economic relationships and the articulation of interests; an enabling environment for social and economic development” (Lal & Haleem, 2002, p. 99).

In the Handbook on Theories of Governance, governance is defined as

“the process of steering society and the economy through collective action and in accordance with common goals” (Ansell & Torfing, 2016, p. 4).

Processes and institutions (both formal and informal) guide and restrain activities of a group and can be conducted in multiple sectors and include multiple stakeholders. Government is a subset of governance and has the authority to create formal obligations (Palvia & Sharma, 2007). Government can be seen as “an actor in the process of governance” (Bannister & Connolly, 2012, p. 8). Central activities of a government are regulation, service delivery and policy-making (Zwahr & Finger, 2004). Governance concerns the state’s ability to serve citizens and other actors, as well as the manner in which public functions are carried out, public resources are managed and public regulatory powers are exercised, including interactions between government and social organizations and how they relate to citizens (Kalsi & Kiran, 2015).

Descriptions of eGovernance also include new processes of coordination (Pathak et al., 2010), planning, formulating and implementing decisions and operations related to governance challenges (Bubou et al., 2018), which point towards that governance implies processes of coordination, planning, formulating and implementing decisions and operations.

To sum up, governance can be seen as processes for steering in order to respond to common challenges. This includes decision-making, implementation and coordination that includes multiple actors. From an IS perspective, it would be beneficial with a structured outline of governance functions, in order to identify how information systems and digitalization can contribute to achieve governance objectives, as well as to further theorize the role of the “e” element.

2.2.2 Notion of “e”

Our analysis of the eGovernance literature illustrates that the notion of e, referring to something digital, is generally superficially dealt with. Apparently, the most common reference to e is information and communication technologies, ICTS or ICT solutions. However, some also refer to the utilization of Internet and the World Wide Web, advanced forms of ICT, new technologies, electronic means, Internet-based technologies and computer networks. An outline of how the literature deals with e is shown in Table 4.

Notion of “e”	Description	References
Information and communication technologies ICTs (Information and Communication Technologies), especially the internet ICT solutions	Electronic Governance is the application of Information and Communication Technologies (ICTs) for delivering government services through integration of various stand-alone systems between Government-to-Citizens (G2C), Government-to-Business (G2B), and Government-to-Government (G2G) services	Chen & Hsieh (2009) Singla & Aggarwal (2014) Bah & Mansour (2018) Finger & Pécoud (2003) Larsson & Grönlund (2016) Molinari, (2011)
Utilization of Internet and World Wide Web	Similar to the above, but with emphasis on the Internet	Din et al. (2017) Garcia-Sanchez, Rodriguez-Dominguez, & Frias-Aceituno (2013)
Advanced forms of ICT	No further description on what is understood with advanced forms of ICT	Haque, (2002)
New technologies	No further description on what is understood with new technologies	Meijer (2015)
Electronic means	...to improve the interaction between government and citizens; and to increase the administrative effectiveness and efficiency in the internal government operations.	Ramadoss & Palanisamy (2004) Marche & McNiven (2003)
Internet-based technologies	direct online connection with the common people, entrepreneurs and other stakeholders	Khanra & Joseph (2019)
Computer networks	to permit expanded public involvement in policy deliberations, an area sometimes described as “E-governance” to distinguish it from service initiatives	Carlitz & Gunn (2002)

Table 4: Notion of e

The literature seems to rely on an assumption that *e* represents ICT and ICT networks as necessary enablers for positive changes to governance. In definitions of eGovernance, many authors in some way imply the use of ICT or electronic means in governance and government services. Some authors also refer to eGovernance as a process where ICT is used to automate procedures and interactions (Akotam et al., 2013; Gberevbie et al., 2016; Ray & Mukherjee, 2007), while others refer to the utilization of Internet for providing services (Akotam et al., 2013; Din et al., 2017; Garcia-Sanchez et al., 2013; Khanra & Joseph, 2019; Potnis, 2010; Singla & Aggarwal, 2014), or the use of technologies to support government relations and interactions (Bannister & Connolly, 2012; Carlitz & Gunn, 2002; Meijer, 2015; Meijer & Bekkers, 2015).

Some argue that *e* refers to the use of new or advanced technologies (Haque, 2002). While this may be true in several cases, one can easily point to eGovernance efforts utilizing mature technologies such as ERP systems or simple technologies such as apps, social media or discussion forums.

The representations of *e* in Table 3 can all be seen as coarse categories that offer basic understanding beyond indicating that ICT and ICT networks are integrated components of eGovernance. While the literature provides a variety of examples of ICTs used for eGovernance, we found few attempts to classify, categorize or theorize *e*. A notable exception is Bannister and Connolly's reflection that technology is not value free but rather ingrained with specific values that are likely to affect the outcomes of its use. We also found examples of categorizations. For example, Ramadoss and Palanisamy (2004) suggest a layered architecture perspective on technology.

In summary, our analysis left us with the clear impression that *e* is superficially understood in the eGovernance literature. This offers ample opportunity for future research to further define the digital aspect that can be used in further theory development.

2.3 Outcomes of eGovernance

This section addresses how eGovernance can be understood in terms of intended outcomes and as transformation—structurally and normatively. A central underlying assumption in the eGovernance literature seems to be that the combination of digital technologies and governance enables innovation or transformations in various areas, e.g. relationships, processes and structures, in order to achieve some desired outcomes or effects. eGovernance should also be understood in a context of technological development in a co-evolution with institutional development as well as societal changes and how collective problems are managed (Rossel & Finger, 2007).

2.3.1 Outcomes as Structural and Normative Transformations

Outcomes related to eGovernance can be categorized in terms of being structural or normative.

Structural governance is defined to be the 'how' of government. It encompasses things such as processes, structures, lines of authority, laws, regulations, stakeholders, forms of communication and responsibilities – the mechanisms by which power is exercised, decisions made, policy is created or changed and its

implementation achieved. Normative governance is the set of value-related features of structural governance including transparency, accountability, integrity, honesty, impartiality, efficiency and so on that governance is desired to enable, to possess or to deliver. Structural governance may be designed to support or achieve normative aims, but in itself it is about how something is done, not about whether or not the way it is done is efficient (or honest or fair). In summary, normative governance qualifies structural governance and structural governance may be, but does not have to be, designed to deliver or support norms. (Bannister & Connolly, 2012, p. 7)

We consider this a valuable, high-level distinction and discuss eGovernance outcomes in our sample in light of these two categories. Much of the literature is concerned with the transformational effects of eGovernance, and we therefore refer to outcomes as structural and normative transformations.

Structural Transformations

The literature offers a number of examples of outcomes as structural transformations. These are summarized in Table 5.

Structural transformations	Description	Example References
Service delivery	ICT changes processes for service delivery	Zwahr & Finger (2004); Al Athmay (2015); Banerjee, Ma, & Shroff (2015); Chen & Hsieh (2009); Finger & Pécoud (2003); Palvia & Sharma (2007)
Regulation	ICT changes processes for regulation; Electronic rulemaking	Zwahr et al. (2005); Zwahr & Finger (2004); Barthwal (2003); Finger & Pécoud (2003); Misuraca (2006)
Policymaking	ICT changes processes for policy making	Zwahr et al. (2005); Zwahr & Finger (2004); Haque (2002); Dawes et al. (2016); Finger & Pécoud (2003); Misuraca (2006); Rubasundram & Rasiah (2019)
Governance mechanisms	New governance mechanisms may be developed; New governance structures	Zwahr et al. (2005); Dawes (2016); Lal & Haleem (2002)
Relationships, interaction & participation	ICT changes governments relationships and interactions with stakeholders; Increased participation of stakeholders in governance processes; Electronically facilitated network interactions, e-societies	Haque (2002); Wong, Fearon, & Philip (2007); Pablo & Pan (2002); Nyirenda & Cropf (2009); Finger & Pécoud (2003); Gberville et al. (2016); Ray & Mukherjee (2007); Bannister & Connolly (2012); Saxena (2005)
Coordination	ICT enables new forms of coordination	Misuraca (2006); Pathak et al. (2010); Myeong, Kwon, & Seo, (2014)
Decision making	ICT enables new processes for planning, formulating and implementing decisions	Larsson & Grönlund (2016); Akotam et al. (2013); Kalsi & Kiran (2015); Marche & McNiven (2003)

Table 5: Structural transformations of eGovernance

ICT is used to enable transformation of governance processes and relationships to citizens, businesses and different governmental bodies (Khanra & Joseph, 2019; Wong et al., 2007). It provides means to facilitate stakeholder interaction (Haque, 2002; Molinari, 2011) and is assumed to involve an increased participation, openness and transformation in communication and interactions (Al Athmay, 2015; Calista & Melitski, 2007; Carlitz & Gunn, 2002; Pablo & Pan, 2002; Ramadoss & Palanisamy, 2004). It includes transformation in multiple relations, classified as

“government-to-citizen (G2C), government-to-business (G2B), government to its internal employee clients (G2E), government to other government institutional clients (G2G), and citizen-to-citizen (C2C). (...) Finally, it involves a transformation of society itself, through the emergence of so-called “e-societies”, made up of networks of relationships like citizen-to-citizen connections, as well as relations among non-government organizations (NGOs), built and sustained using electronic means” (Pablo & Pan, 2002, p. 289-290).

eGovernance changes processes for managing and sharing information and knowledge (Al Athmay, 2015; Meijer & Bekkers, 2015; Ray & Mukherjee, 2007) and ways to deliver services (Haque, 2002; Zwahr & Finger, 2004). New governance mechanisms to manage social interactions may also develop, instead of being primarily governmental (Zwahr et al., 2005). Technologies are used to support networked interactions between government organizations and stakeholders (Bannister & Connolly, 2012; Meijer, 2015). Central is the exchange of information between government and citizens and is a form of interface between them (Singla & Aggarwal, 2014). Technologies have an impact on the role of the state and its core functions service delivery, policy-making and regulation. It is according to Zwahr and Finger (2004) even one of the key drivers of state transformation, while others (Bannister & Connolly, 2012) mean that technology enables transformation but there is little evidence that it is the driving factor.

ICT is used to facilitate processes for decision-making and implementation, as a medium for communication and collaboration and enables active participation and citizen involvement (Misuraca, 2006). It may include electronic consultation, controllership and engagement (Bubou et al., 2018).

eGovernance is also related to innovation and improvement and is often intended to bring something new. eGovernance is argued to enable new styles of leadership and decision-making, new ways of conducting and transacting business, new ways of communicating and debating and new ways of organizing and disseminating information (Gberevbie et al., 2016; Lal & Haleem, 2002; Palvia & Sharma, 2007). eGovernance has even been referred to as “an innovation management process in the public sector” (Potnis, 2010, p. 41), and a main rationale for eGovernance is to trigger innovation (Haque, 2002). It brings a new understanding of governance, which requires of all actors to participate actively (Misuraca, 2006). eGovernance will raise new practical and theoretical problems, which also motivates it to be a distinct field of study (Bannister & Connolly, 2012).

To sum up, structural outcomes of eGovernance may involve transformations in structures and processes for service delivery, policy-making, regulation, decision-making and interaction between stakeholders. Technologies may also enable development of new mechanisms, means and methods for governance, which will raise new issues for problematization.

Normative Transformations

Our analysis suggests that the eGovernance literature has a strong emphasis on outcomes in the form of normative transformations, i.e. improvements in different areas. Table 6 summarizes these.

Normative transformations	Description	Example References
Efficiency	eGovernance is argued to be more efficient; including cost efficiency and time efficiency	Akotam et al. (2013); Haque (2002); Calista & Melitski (2007); Din et al. (2017); Gberevbie et al. (2016); Kalsi & Kiran (2015); Khanra & Joseph (2019); Ray & Mukherjee (2007)
Transparency	Information and communication technologies (ICTs) are seen by many as effective and convenient means to promote openness and transparency and to reduce corruption.	Akotam et al. (2013); Barthwal (2003); Din et al. (2017); Haque (2002); Kalsi & Kiran (2015); Khanra & Joseph (2019); Nyirenda & Cropf (2009); Ray & Mukherjee (2007)
Accountability	eGovernance is expected to enable increased accountability	Akotam et al. (2013); Al Athmay (2015); Barthwal (2003); Choudhari, Banwet, & Gupta (2011); Gberevbie et al. (2016); Haque (2002); Misuraca (2006); Nyirenda & Cropf (2009);
Participation	eGovernance enables increased participation of stakeholders in governance processes and increased civic engagement	Saxena (2005); Calista & Melitski (2007); Carlitz & Gunn (2002); Saxena (2005); Al Athmay (2015); Choudari et al. (2011); Kalsi & Kiran (2015); Lal & Haleem (2002)
Effectiveness	eGovernance is assumed to improve effectiveness, in for instance information and service delivery.	Al Athmay (2015); Bubou et al. (2018); Dawes (2016); Gberevbie (2016); Khanra & Joseph (2019); Pablo & Pan (2002)
Responsiveness	eGovernance is expected to improve responsiveness	Barthwal (2003); Choudari et al. (2019); Gberevbie et al. (2016); Khanra & Joseph (2019); Lal & Haleem (2002)
Democracy	eGovernance intends to enhance democracy	Al Athmay (2015); Calista & Melitski (2007); Chen & Hsieh (2009); Gberevbie et al. (2016); Misuraca (2006); Saxena (2005)
Good governance	eGovernance intends to enhance good governance	Barthwal (2003); Lal & Haleem (2002); Misuraca (2006); Kalsi & Kiran (2015)
SMART governance	eGovernance aims to achieve Simple, Moral, Accountable, Responsive & Transparent (SMART) governance	Alotaibi (2019); Singla & Aggarwal (2014); Ramadoss & Palanisamy (2004)
Economic development	eGovernance is expected to improve economic development	Banerjee et al. (2015); Din et al. (2017); Marche & McNiven (2003); Misuraca (2006); Nyirenda & Cropf (2009)

Table 6: Normative transformations of eGovernance

Some definitions and descriptions of eGovernance include expected outcomes, effects or aims in terms of normative aspects, such as efficiency, transparency and accountability (Akotam et al., 2013; Din et al., 2017; Haque, 2002). Aim is to improve the quality of services and governance and to encourage and empower citizen participation in decision-making. This may change the notion of citizenship and understandings of needs and responsibilities (Palvia & Sharma, 2007). Central objectives with eGovernance are to achieve good governance (Barthwal, 2003; Misuraca, 2006; Saxena, 2005), advance democracy (Bubou et al., 2018; Gberevbie et al., 2016; Haque, 2002; Pathak et al., 2010), strengthen civil society (Haque, 2002), and support economic development (Banerjee et al., 2015; Misuraca, 2006; Saxena, 2005). Some authors mean that eGovernance is an attempt to achieve SMART governance (simple, moral, accountable, responsive and transparent) (Ramadoss & Palanisamy, 2004; Singla & Aggarwal, 2014).

A question is whether ICT affects normative values, and Bannister and Connolly (2012) argue that it does—technology enables certain norms. Norms may also change in themselves, and transparency is suggested to be an example of that. The argument is that transparency and provision of information are a way to transfer governance to a community by information rather than regulation. In a network society, accountability is also something that is challenged, since there are no clear nodes to make accountable as there is in hierarchical systems. New technologies, such as AI and further automation, will pose new challenges to governance, and an aspect of eGovernance will also be to address these challenges (Bannister & Connolly, 2012). eGovernance also has potential to improve access to information (Al Athmay, 2015; Barthwal, 2003; Calista & Melitski, 2007; Haque, 2002; Saxena, 2005), reduce corruption (Al Athmay, 2015; Din et al., 2017; Gberevbie et al., 2016; Haque, 2002), facilitate collaboration (Chen & Hsieh, 2009; Lal & Haleem, 2002; Pablo & Pan, 2002; Potnis, 2010), have seamless integration of information and services (Chen & Hsieh, 2009; Saxena, 2005) and decentralize power (Al Athmay, 2015; Calista & Melitski, 2007; Misuraca, 2006).

To summarize, eGovernance is often associated with normative values such as efficiency, transparency, accountability, participation, effectiveness, responsiveness, as well as enhanced democracy and good governance. Even though technologies may facilitate this, it is important to problematize this notion and to be aware of risks related to digitalization.

2.4 From eGovernance to Digital Governance

“Digital governance” is by some scholars (Misuraca & Viscusi, 2014) considered to be an evolution of the concept of eGovernance. It has also been considered to have developed through four stages: organization-oriented eGovernment, citizen-oriented eGovernment, organization-oriented eGovernance and citizen-oriented eGovernance (Kang & Wang, 2018). If eGovernment has a focus on using technologies to improve public services, eGovernance embraces transformations of the relationship between governments and citizens and other stakeholders, and digital governance is a further development of this, accentuating the impact of technologies and how it transforms governance (Barbosa, 2017). A distinction is made between digital government and digital governance, where digital government refers to structural elements while digital governance is about functionality (Charalabidis & Lachana, 2020b). While for instance Charalabidis and Lachana emphasize that digital governance

brings increased efficiency, others argue that it also goes beyond efficiency and includes enhanced democracy and equity (Kitsing, 2019). Nevertheless, digital governance involves an advanced use of ICT (Kang & Wang, 2018) and the use of new technologies for advanced data analysis (Chandler, 2019).

“Digital governance’ is based on information and communication technology and big data. As a governance model, it optimizes managerial decisions and policies through integration of complex data analysis, data modeling, data optimization and data visualization in government operations and public management processes (...) Digital governance emphasizes strengthening governmental managerial capacity and enhancing the legitimacy, transparency and responsiveness of good governance. All of this is done so as to better solve social problems and serve all citizens” (Kang & Wang, 2018, pp. 92–93).

Similar to eGovernance, for digital governance it is also argued that ICT has a “potential to enhance service quality, openness, transparency and ultimately quality of life and sustainable growth” (Charalabidis & Lachana, 2020b, p. 383). It is assumed that digital governance will bring increased efficiency as well as engagement between citizens and governments. It is not clear though to what extent ICTs empower actors in actuality (Vij & Gil-García, 2017). Digital technologies are applied to develop innovative solutions to social, political and economic challenges (Bertot et al., 2016). Some authors also argue that digital governance is a means to achieve sustainable development goals (Barbosa, 2017; Janowski, 2016), but that there is a gap between aspiration and capacity (Janowski, 2016).

Digital governance relates to the use of Internet, which enables new ways for stakeholders to organize themselves and participate in various contexts (Luna-Reyes, 2017). With the application of network technologies, governance is developing into a more network-oriented form (Barbosa, 2017; Kitsing, 2019). It is also argued that digital governance may trigger a shift from new public management to digital era Governance. It is based on digital processes, citizen-oriented holism and reintegration of government organization (Dunleavy, 2006; Kitsing, 2019; Misuraca & Viscusi, 2014). Digital governance brings the possibilities to bridge fragmentation and silos and enable collaboration. However, digital technologies are not enough, development of public sector governance is to a high degree dependent on formal and informal institutions, including laws and regulations, and norms, values and habits. Network-oriented governance is distinguished as a mode of coordination, compared to hierarchical or market-based principles. Network-oriented governance builds on reciprocal relationships, mutual trust and common values and interests (Kitsing, 2019). With digital governance, values may be generated in new ways, such as through public–private partnerships. There is however a need to do more research that evaluates value outcomes from digitalization initiatives (Luna et al., 2015).

Digital governance addresses problems in terms of effects rather than causation. The complexity of today’s interactions and processes makes it difficult to investigate causes of phenomena, and interventions and digitalization usually have unintended side effects. Therefore, the focus in digital governance is rather to minimize negative unintended consequences and focus on responsiveness, rather than figuring out root causes of things. The attention is on correlation and interlinkages and development of new means for sensing and responding continuously to emergent effects (Chandler, 2019).

As Almeida et al. (2020) point out, digitalization generates various dilemmas, which challenge how collective actions are conducted. Institutions have to develop resilience and adaptability in order to manage contemporary and future challenges. Governance in the

digital world is not just about regulation, but is more complex. It involves multiple actors and vast cultural, political, economic and social differences. Governance mechanisms and models have to be developed that lead to public goods and promote good behaviour. There are various risks associated with the digital environment, such as misinformation, biased algorithmic decision-making, social media manipulation, monopoly situations for large tech companies, cyber attacks, how surveillance is applied and violations of privacy. Critical issues are protection of human rights, accountability, fairness, compliance and allocation of social benefits. The digital context is not territorial, and decisions made in a company may have effects in multiple countries elsewhere. Digitalization also tends to bring turbulence and fast transformations, which may bring social crises. In this context, institutions have an important role for societal resilience. Some argue that the solution to these challenges, is not more control by the state nor privatization, but polycentric governance mechanisms that promotes civic engagement and involvement of actors. Key to governance in the digital context is decentralized processes and collaborative decision-making that involves multiple stakeholders and transparency and accountability of both stakeholders and algorithms (Almeida et al., 2020). One of the changes that digitalization and informatization brings to governance, is some shift from legality towards transparency. Formal legislation tends to lag behind technological development, and there is an increasing horizontalization of relations, which partially changes power dynamics. In this context, transparency and accountability are key, with information rights as an important aspect (Bovens & Loos, 2002).

2.4.1 Definition of Digital Governance

In light of the above, there is a need for a definition of digital governance. Based on the literature on eGovernance and digital governance this definition should reflect both the use of digital technologies in processes and structures of governance, its relation to governance objectives and values, the capabilities digital technologies bring, as well as its transformative potential. Based on that, we suggest the following definition of digital governance:

Digital governance is defined as digital technology ingrained in structures or processes of governance and their reciprocal relationships with governance objectives and normative values. Digital governance includes the utilization of digital capabilities and involves a transformation of structures, processes or normative values.

3. Discussion

Considering digital governance as an evolvement of eGovernance, it was important to first develop a deeper understanding of the concept of eGovernance. There has been a development from a focus on digitalization of government services, to embracing a wider perspective that includes interaction among multiple stakeholders in eGovernance. In the literature reviewed, digital governance has many aspects in common with the notion of eGovernance, but was found slightly more elaborate regarding the digital aspect. It has an emphasis on new technologies and network organization (Barbosa, 2017) that is less visible in the eGovernance literature. This relates to the concept of digital era governance, which is a different mode of governance compared to hierarchical and new public management approaches (Kitsing, 2019) which also resonates with the new possibilities that digital

technologies enable for participation and engagement of stakeholders. Digital technologies changes the conditions for governance and how power and influence are distributed, and also has an emphasis on values such as transparency, trust, mutual interest and participation. However, digitalization also brings new challenges and requires new mechanisms of governance to protect human rights and establish a societal infrastructure of fairness and accountability. Nevertheless, governance is going through a transformation, where information and digital technologies to manage, utilize and leverage on information are central mechanisms (Kang & Wang, 2018). Therefore, it is crucial to further expand the theoretical foundation for the role of both information and information systems in governance in the digital age.

According to Dawes (2009), research in digital governance has focused primarily on advancing the practice concerning online services and improved management. Due to complex and dynamic challenges that reality presents, there is a need for a holistic approach that accounts for questions of what an appropriate digital governance infrastructure would look like, as well as basic questions regarding governance and democracy in the digital era. This has to consider institutional reforms, social trends, human elements, new technologies, information management, multiple actors, interactions and various complexities. Legitimacy, trust, power relationships and balancing of different objectives are questions that are highlighted as important to address (Dawes, 2009).

A scientific foundation for research in digital governance has been requested (Charalabidis & Lachana, 2020a, 2020b), including the following major parts; identification and description of problems and solutions in digital governance; a coherent conceptual development; methods and tools to develop scenarios, impact assessment and simulation along with training curriculum and strenghtening of the scientific foundation of digital governance (Charalabidis & Lachana, 2020a, 2020b). Related to this, this article is a contribution to the conceptual foundation of the field of digital governance.

As Kazanchi (1996) pointed out, conceptual development provides a means to define and create understanding of a phenomena. This chapter contributes to an understanding of the meaning of the concept of digital governance. Related to some of the qualities of concepts that was highlighted in the introduction, such as clarity, possible application of the concept, theoretical glue and cumulateness (Conboy, 2009), improvements can be made. There are sometimes conflicting explanations of the concept of eGovernance, and different concepts are used quite interchangeably, so clarity of concepts can be enhanced. This tends to create some confusion and influences the theoretical robustness. Certain patterns of meanings of eGovernance and digital governance have been recognized, and our sample indicates that digital governance builds on the notion of eGovernance, which makes the cumulative aspect stronger.

A final dimension of quality of concepts is the level of abstraction that is addressed (Lewis et al., 2005). We found that eGovernance and digital governance primarily tend to be addressed at a practical level, and a more theoretical and also philosophical contribution would be beneficial and provide a deeper theoretical foundation.

4. Conclusion

This study has explored the use and understanding of the concepts eGovernance and digital governance and suggested a definition of digital governance. The literature contained a number of different views and perspectives and neither of the concepts were found to have agreed upon definitions or well-defined constructs. The concept digital governance has inherited meanings from the concept of eGovernance. While we found more theoretical contributions related to eGovernance, the digital aspect of digital governance was found to have been slightly more elaborated. In light of this, we found no clear conceptual distinction between the two concepts and therefore suggest that the scientific community from now on joins forces in developing the concept digital governance further, thus ensuring to encompass existing understandings of both terms. As a starting point, our analysis offers elaborate perspectives on existing use and understanding of the two basic elements of digital governance— namely “governance” and “digital” (where the digital aspect corresponds to the notion of “e” in the concept of eGovernance). Further theorization and conceptualization of the digital aspect in digital governance would be a valuable contribution to theory development.

The literature revealed different views on eGovernance which can be structured in two distinct but interrelated perspectives: (1) how ICT is used in governance and (2) outcomes of eGovernance as structural or normative transformations. It seems to be common to include normative values in descriptions of eGovernance, and a structured outline of (existing and possible) structural elements of governance in which information systems can play an important role would be beneficial for further development of the digital governance field.

4.1 Future Research

We suggest that the digital governance domain would benefit from increased theorization related to its basic concepts. Our analysis can hopefully be seen as an initial contribution to this work by offering clarity on what the basic building blocks are and how they have been understood and used by the community so far. Future steps may include developing more definitions on concepts, constructs and relationships that can later be further theorized and tested.

The literature tends to describe digital governance in positive terms. However, there are risks and concerns that invite critical reflection and problematization. Many times, such initiatives fall short on expectations or fail (Choudari et al., 2011; Haque, 2002; Kalsi & Kiran, 2015; Nyirenda & Cropf, 2009). Digital divide (Din et al., 2017; Haque, 2002; Khanra & Joseph, 2019; Marche & McNiven, 2003), issues of security, identity and privacy (Akotam et al., 2013; Alotaibi, 2019; Dawes et al., 2016), trust (Dawes et al., 2016), fake information (Alotaibi, 2019; Calista & Melitski, 2007), technological dependencies (Dawes et al., 2016) and information overload (Calista & Melitski, 2007) have been highlighted in the literature as concerns. Another risk that has been raised is that digital governance tends to be driven from a technocratic viewpoint, and a stronger governance angle ought to be taken (Saxena, 2005).

Even if the literature on digital governance seems to address challenges of governance in the digital environment a bit more than the eGovernance literature, there is more work to be done to develop a theoretical foundation for governance in the digital era. A further understanding of what changes digital governance brings and what this means is also suggested, whether it is improvement of current practices or whether governance per se transforms. A thorough understanding of the conceptual foundation of digital governance provides a basis for studying relationships between digital governance and societal challenges—both how digital governance can be applied to address societal challenges, as well as considering the risks that it may bring.

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The State of information infrastructure for global climate governance

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Abstract

Purpose

The world is facing global challenges that require international collaboration. This study describes and analyses how digital technologies are applied in global governance to respond to such critical challenges.

Design/methodology/approach

The authors apply an interpretive case study of climate reporting to the United Nations Framework Convention on Climate Change (UNFCCC) as a case of digitalization in global governance. It includes interviews with officials in the Swedish public administration and the UNFCCC secretariat to cover national and international levels. The authors describe the reporting process and analyze the role of information systems through the lens of information infrastructures.

Findings

'Information infrastructure' is a valuable instrument to understand digitalization in global governance as a complex interplay between information systems, information, standards, organizations, people, and social structures. The level of sophistication is, however, basic with a large potential for improvement — for instance in analytical and communicative services to support evidence-based decision making and assessment of progress.

Research limitations/implications

The data collection is limited to one governance process: reporting. Future studies should complement the findings by broadening the scope to other processes. The authors propose that digital global governance is dependent on an effective information infrastructure and that the five design principles by Hanseth and Lyytinen (2016) offer guidance when developing this.

Practical implications

The results indicate a large unutilized potential of digital technologies to improve progress assessment, communicate more effectively with stakeholders and identify new ways of visualizing data to support decision making in global climate policy.

Social implications

Use of digital technologies, as suggested in the article, could strengthen the implementation capability of climate goals, which is of urgent need.

Originality/value

While most research in digital governance considers the national or municipal, this study provides empirical insight and theorization of digital technologies in a global governance setting.

Keywords

Digital governance, information infrastructure, global challenges, global governance, climate governance

Paper type research paper