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Abstract:

In this paper, we present a comprehensive and distilled model that can help researchers to 1) enter the e-government field, 2) understand what the field mainly studies in a distilled way, and 3) reflect on further research in the field. Departing from Steven Alter's (2013) work systems theory and particularly his work systems framework (WSF), we introduce a framework for understanding e-government work systems (i.e., the eGovWSF). We distil the basic core of e-government work systems through an interpretative and hermeneutic approach by building on previous research and theorizations made in information systems and e-government research. We unpack the eGovWSF into 12 main elements; discuss their role as internal, semi-external, and external to e-government work systems; and reflect on the connections between these elements. Thus, contributions include a conceptual discussion on e-government's core subject matter, the framework's applicability, and future research needs.

Keywords: E-Government, Digital Government, Theory Building, Work System Framework, Conceptual Framework.

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1 Introduction

Recently, one of the authors received an email from a doctoral student with some seemingly simple questions:

1) Could you please send me some papers that summarize what e-government concerns?
2) What distinguishes e-government from other research areas?
3) What connects the e-government field and the information systems (IS) field?

As an active researcher in both fields, the author should have found it easy to answer these questions, but the author did not. At least two alternative reasons could explain why: 1) the author did not sufficiently understand the fields or 2) the fields do not provide good answers to such questions. As IS researchers who actively conduct research in the e-government field and all experience the same problem, we feel inclined to believe the latter. Thus, we argue that we still need to discuss fundamental questions such as how can we comprehensively define e-government?

Researchers have posed this question in different variants before. In the e-government research (or digital government as many now refer to it) field, one can find that authors have defined the field in several different ways (Pascual, 2014; Scholl, 2015), discussed its novelty (Bélanger & Carter, 2012; Yildiz, 2007), and discussed e-government's role in the IS field (Bélanger & Carter, 2012; Bolívar & Muñoz, 2010; Carter, Weerakkody, & Phillips, 2016; Rana, Dwivedi, & Williams, 2015). Unfortunately, researchers tend to use the label "e-government" to refer to two phenomena that inherently intertwine: the *practice* of digitalizing public sector operations and the *research* field that studies this practice. In this paper, we focus on characterizing the key concepts behind e-government practice for the e-government research community. However, the fact that the two phenomena intertwine means we cannot do so without also addressing the research field's nature. Scholars have tried to map e-government as a research field (e.g., Andersen et al., 2010; Dawes, 2008, 2009; Grönlund, 2004; Heeks & Bailur, 2007; Irani, Love & Montazemi, 2007; Scholl, 2007, 2010; Yildiz, 2007) or as a practice (e.g., Sandoval-Almazana & Gil-Garcia, 2016; Luna-Reyes & Gil-Garcia, 2014) from various perspectives and theoretical lenses. Consequently, the community does not lack models per se, but we argue that we still miss an e-government conceptualization that describes what e-government practice focuses on in a more comprehensive way.

In this paper, we present a comprehensive and distilled model that can help researchers to 1) enter the e-government field, 2) understand what the field mainly studies in a distilled way, and 3) reflect on further research in the field. Few (if any) comprehensive models represent e-government in a simple and illustrative manner (Bannister & Connolly, 2015). Thus, we introduce such an overview that indicates e-government's main characteristics and study objects and, through doing so, help researchers, newcomers or not, understand and discuss the field.

E-government mainly concerns how one can use information systems to transform government organizations and services (Lenk, 2012). Thus, e-government attracts attention from scholars from different disciplines concerned with design, implementation, and effects of information systems in public organizations (e.g., public administration, computer science, and social work). However, scholars from the IS field dominate e-government research. The IS field investigates how social and technical elements influence work in organizations (Winter, Berente, Howison, & Butler, 2014). The IS field examines how various actors apply information technology (IT) by investigating the design, delivery, use and impact of information technologies in organizations and society (Elliot & Avison, 2005). Many IS scholars adhere to the socio-technical perspective on the relationship between technology and organization (Mumford, 2006; Spagnoletti, Resca, & Sæbø, 2015). A socio-technical approach holds that a system constitutes various interrelated elements that work together. The approach helps researchers identify system characteristics and how they relate to the organizational domain in order to understand the nature of work and so-called *work systems* (Winter et al., 2014).

Alter (2013) introduced work systems theory (WST) as a tool for analyzing and understanding relationships between technology and work routines. Scholars have extensively used the WST for teaching in the IS area (Alter, 2013), which indicates its explanatory and analytical potential to guide students and others to analyze existing systems and discuss potential improvements. While researchers have adapted and used the WST for various research purposes (Alter, 2013; Truex, Alter, & Long, 2010), they have not yet (to our knowledge) discussed it in depth in the e-government area. We argue that Alter's (2013) WST and especially the work systems framework (WSF) represent a universal and valuable point

of departure in our quest to better understand e-government practice. The arguments and suggestions that Alter (2013) makes resonate with our view and ambition to overview and distil e-government practice and to focus on its characteristics and key concepts. We acknowledge that one could use other work as a basis to generate comprehensive e-government models or frameworks but have confidence that the WSF constitutes a generic model worth investigating further.

With this paper, we make two main contributions. First, we provide a comprehensive and distilled e-government model (the eGovWSF) that integrates generic thinking from Alter's (2013) work with the public sector's specific characteristics. Second, we further contribute to theoretically developing e-government research (Heeks & Bailur, 2007) and, thus, answer the call for more conceptually oriented e-government research (Bannister & Connolly, 2015).

This paper proceeds as follows: in Section 2, we introduce Alter's (2013) WSF and its roots in WST. In Section 3, we present our research approach for modifying the WSF for the e-government context. In Section 4, we discuss particularities about the public sector context and their consequences for how we understand e-government. In Section 5, we present the eGovWSF model. In Section 6, we discuss the implications of and application areas for the eGovWSF model. Finally, in Section 7, we conclude the paper.

2 The Work System Framework

We use Steven Alter's (2013) work system theory as a basis from which to provide a comprehensive and distilled e-government model. WST provides a generic model for systems in action. The theory views human actors, business processes, products and services, information, and technology as parts of a system while also acknowledging the context. Alter (2013) defines a work system as "a system in which human participants and/or machines perform work (processes and activities) using information, technology and other resources to produce specific products/services for specific internal and/or external customers" (p. 57). WST includes two main parts: one static and one more dynamic view on systems. We focus on the more static part, the work system framework (WSF), in this paper. We argue that the WSF, rooted in the IS field, is easy to understand and covers how components work together in an information system, which means we can use it to elaborate on similarities and differences between the e-government field and the IS field in general.

WSF pictorially represents "a work system in terms of nine elements included in a basic understanding of the work system's form, function, and environment during a period when it is relatively stable, even though incremental changes may occur during that period" (Alter, 2013, p. 77). The framework (see Figure 1 on the next page) involves completely internal system elements (processes and activities, participants, information and technologies), partially inside and outside system elements (customers and products/services), and largely outside elements (environment, infrastructure, and strategies) (Alter, 2013). Arrows in the model emphasize the need to align elements to achieve the work system's purpose (Alter, 2013).

The processes and activities—the building blocks for designing, managing, and producing products or services for customers—constitute the first and foremost internal elements in a work system. Participants perform work in the system based on clearly defined steps (processes) or based on more vague judgments and improvisations (activities). Work systems create and use information that participants process through processes and activities. Information in a work system includes both information entities that IT systems in the work system manage and information that people manage such as verbal communication and knowledge.

A work system produces products or services that comprise information, physical entities, and/or actions to benefit customers (Alter, 2013). We need to focus on products to understand a work system's effectiveness (i.e., to understand how products and services address customers' needs). Customers receive the work system's products and services. Customers can also participate in the work system (especially in a service system) (Alter, 2013). Therefore, for a system to produce proper products and services, organizations need to analyze who their customers are, what needs they have, and how they use the products and services that result from the work system.

The environment constitutes one element that exists mainly outside the work system itself. Environmental issues relate to organizational, cultural, competitive, technical, regulatory, and demographic elements surrounding and affecting a work system (Alter, 2013). Moreover, stakeholders, policies, production, and politics all make up the environment and influence a work system's performance. Consequently, we need to understand environmental elements and their impact to analyze, design, or evaluate work systems

properly. Infrastructure includes resources (human, information, and technical) that a work system uses while other actors manage and share it. A work system needs infrastructural elements to perform, and one should consider these elements in analyzing a work system. Finally, different strategies (e.g., enterprise strategies, department strategies, and work system strategies) may be in place to govern the system. In the ideal situation, these three strategy types align, but they may not always do so.

Alter (2013) discusses organizations and work systems in general and, we would argue, implicitly assumes private organizations and customers. He discusses typical business organizations. Furthermore, Alter (2013) clearly states that researchers need to conduct more work to better understand work systems and to adjust the WSF to specific areas. The public and private sectors share many similarities and have increasingly become intertwined (Kickert, Klijn & Koppenjan, 1997); still, Barzilai-Nahon and Scholl (2007) argue that both the public and the private sectors would benefit from better understanding these similarities and differences. They conducted a study where they identified several areas in which e-government and e-business share similarities, such as process improvements, back-end integration, cost savings, information sharing, vertical and organizational e-systems integration, increased responsiveness and service quality, standardization efforts, and the criticality of senior leadership support. They distinguish some areas in which they differ as well, such as the drivers and motivations for e-government and e-business, stakeholder expectations, and resource availability. Considering the similarities between the sectors, we find the WSF a good starting point for discussing e-government while also acknowledging the need to modify the framework to better understand e-government's particularities. Thus, we respond to Alter's call to adjust the WSF for specific contexts. We adjusted the WSF to create the eGovWSF through an interpretative and constructivist hermeneutic process, which we explain in Section 3.

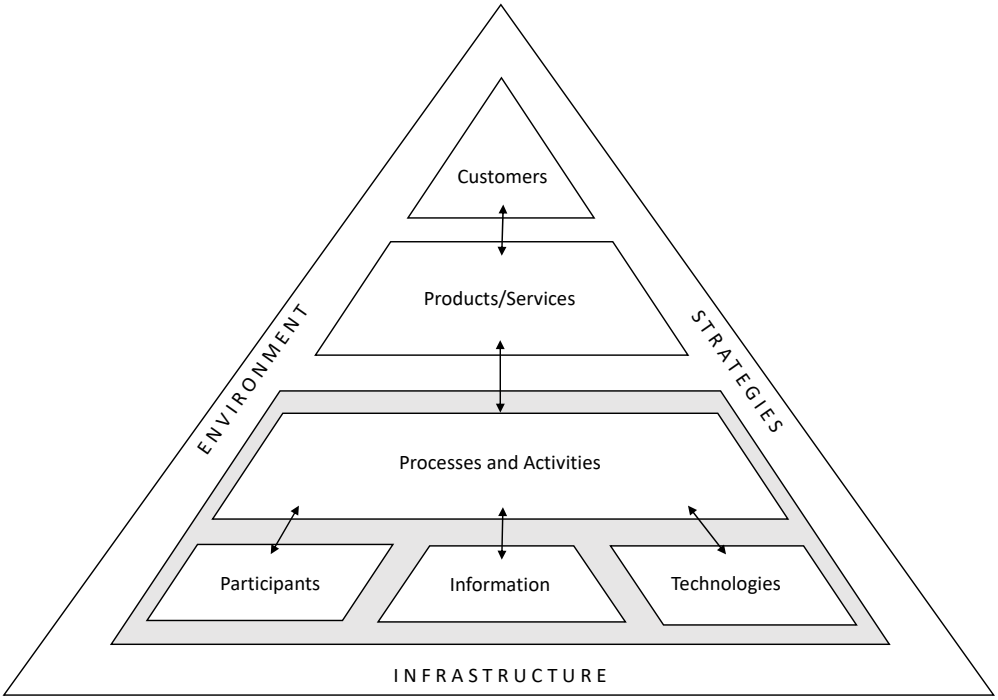

Figure 1. The Work System Framework (Alter, 2013)

3 Our Approach for Generating a Work System Framework for E-Government

We cannot easily conceptually refine complex phenomena such as e-government, but researchers need to do so to identify a shared starting point for research and practice (Pollitt, 2011). In this paper, we develop a conceptual framework to understand e-government. Building on Jayaratna's (1994) work, we understand a conceptual framework as "a meta-level model" through which a range of concepts can be "clarified, categorized, evaluated or integrated" (p. 42). Thus, such frameworks provide researchers with a "metatheoretic language" (Ostrom, 2005, p. 28) that help them see a phenomenon's necessary elements

and the relationships between them and, thus, understand and develop theories. As such, conceptual frameworks constitute the first building blocks in theory development.

A conceptual framework for e-government needs to take a holistic perspective in order to acknowledge the phenomenon's complexity while containing enough detail such that it expands the degree to which we understand its whole and its specific parts. For this purpose, we conducted our work in an interpretative and constructivist hermeneutic manner (Klein & Myers, 1999; Boell & Cezec-Kecmanovic, 2014; Butler, 1998). Such an approach typically starts with some initial ideas that stem from researchers' experiences in conducting empirical and theoretical work on the topic at hand and constitutes an established approach for conceptual refinement in the IS and e-government fields (e.g., see Lindgren & Jansson, 2013; Hofmann, Sæbø, Za, & Braccini, 2018; Morschheuser, Werder, Hamari, & Abe, 2017; Stendal, Thapa, & Lanamaki, 2016). In our case, we all are established researchers in the IS and e-government fields (e.g., see Lindgren, Madsen, Hofmann, & Melin, 2019; Melin, Sarkar, & Young, 2020; Sæbø, Rose, & Flak, 2008; Braccini, Sæbø, & Federici, 2019). Based on our theoretical and empirical work on information systems development in the public sector, we shared the experience of lacking a comprehensive and useful model that depicts e-government practice's nature. Existing e-government representations (e.g., see Bolívar & Muñoz, 2010; Carter et al., 2016; Rana et al., 2015) often focuses on capturing the phenomenon's complexity rather than presenting a simplified yet comprehensive overview. Capturing complexity serves certain purposes and needs, but we wanted to find an e-government model that could capture e-government practice's core and be useful for both our teaching and research activities. Subsequently, we decided to use Alter's (2013) WSF due to our teaching experiences. We have used the WSF when teaching undergraduate IS courses and seen its explanatory power and balance between complexity, completeness, and pedagogical usefulness. Hence, we initially assumed the framework to be a useful starting point for understanding the more specific e-government domain. In applying the WSF in the e-government context, challenges and limitations in using it soon surfaced, which spurred our efforts to search additional literature and adjust the framework accordingly.

We followed an iterative research process, which means that we searched for, acquired, analyzed, and interpreted literature iteratively. Following the hermeneutic methodology that Boell and Cecez-Kecmanovic (2014) suggest, we conducted a literature review based on hermeneutic circle principles for analysis and interpretation. This circular approach involves the following iterative steps: 1) reading, 2) mapping and classifying, 3) critical assessment, 4) argument development, 5) research problem/questions, and 6) searching. The approach acknowledges that researchers have accumulated knowledge and experience that they can use as a starting point for the review process.

By reading scientific papers on the chosen topic in a systematic and analytical manner (the first step), researchers can identify key concepts, relevant theories, findings, and contributions in a body of literature. We examined literature on e-government published in IS journals (basket of eight journals) and in the top-ranked journals in the e-government field (such as *Government Information Quarterly* and *Transforming Government: People, Process, Policy*). Thereafter, researchers can map and classify papers using various analytical tools (the second step). In our case, we used Alter's (2013) WSF as a conceptual framework (a theoretical lens) to guide our analysis and map our findings to the various elements in the original framework. By critically assessing the identified literature, we strived to find coherent arguments and distill problems areas about how one can understand elements in the WSF from an e-government perspective. In the third and fourth steps (critical assessment and argument development, respectively), we iteratively assessed and adapted the elements in the WSF (when needed). Furthermore, we incrementally included new elements to the framework to capture particular details about e-government as depicted in the reviewed literature. Hence, in the third and fourth steps, we made discrepancies, questions and problem areas in the material salient (the fifth step), that, in turn, steered and fueled our continued search for additional literature (the sixth step).

We iterated on the review process until we found that we gained no further information to understand and frame the eGovWSF from the literature and until we could harmonize the model's various parts and create a new coherent whole that captured e-government practice as a work system. Throughout the iterations, we also presented and discussed the framework with students to explore its use and usefulness as a teaching device and to gather feedback from them concerning its value as an analytical tool. This validation included students from various education levels (bachelor, master's, and continuing education programs) and two countries (Norway and Italy).

We regard the resulting framework (eGovWSF) as a simple theory (Whetten, 1989) that both describes and explains e-government practice. As such, the framework provides a theoretical tool for describing and

analyzing what e-government is, its various subelements, and how these elements relate to each other. Furthermore, we discuss these elements' generalizability and how they are embodied in practice. Apart from describing what e-government *is,* the eGovWSF also explains *why* e-government has these characteristics and *why* e-government differs from general IS developments. Using Gregor's (2006) well-known terminology, we regard the framework as a tool for understanding, analyzing, and explaining how, why, when, and where e-government takes place (i.e., corresponding with both theory type I and II in Gregor's (2006) taxonomy). However, in this paper, we emphasize understanding and analyzing e-government and focus less on explaining it. In sum, we see the eGovWSF as a "sensitizing device" at a relatively high abstraction level through which we can view a part of the world in a certain way (see Gregor, 2006; Klein & Myers, 1999).

As with all research types, conceptual research such as ours has several limitations. Perhaps the most pertinent limitation concerns the seemingly unstructured review approach, whereas many scholars prefer more structured approaches (e.g., following Webster and Watson's more conventional SLR recipe (2002)). However, in the literature review and conceptual development that we discuss here, we focused on interpretation and understanding, not on determining the frequency with which pre-defined keywords or citation paths occurred. Building on hermeneutic constructivist philosophy, we do not assume that there is a correct or ultimate way to understand e-government that one can unveil through searching the existing literature in a structured way. Instead, we engaged in dialectical reasoning (Myers, 1994; Butler, 1998) on the nature of e-government practice to understand e-government in a more comprehensive and consistent way. Here, we see a particularly imperative need to understand both the part and whole by continuously assessing, interpreting, and questioning the literature in an adaptive manner (see Boell & Cezec-Kecmanovic, 2014; Butler, 1998). We argue that we would not have been able to reach the understanding we attained through a highly systematic search in databases based on pre-defined keywords.

Another limitation relates to model we chose (i.e., Alter's (2013) work systems framework). One might see the WSF as too generic and simplistic. However, all models are simplified versions of a socially constructed reality, and we see WSF as a valuable starting point to discuss e-government's various elements to create a framework with strong analytic but also explanatory qualities. Simplifications are needed in order to enter a new field and make sense of it.

A final limitation concerns context. For e-government, more than for IS research in general, the national and cultural context matters. For example, political governance models and values heavily affect how governmental actors develop and implement e-government strategies and practices. Therefore, we argue that the eGovWSF must acknowledge and be flexible enough to address contextual issues that vary across nations and cultures. Thus, we need to be transparent about our own geographical and cultural context (i.e., the Scandinavian and European context) since it affects how we interpret government and public organizations. The European and Scandinavian spheres (i.e., Western welfare states) dominate how we describe government and the public sector in this paper. We believe that the eGovWSF applies to contexts other than European welfare states but acknowledge that one would likely see differences between various national, political, and cultural contexts when exploring and interpreting the model's various elements in specific contexts. Such differences may include differences in political systems and in how researchers and practitioners interpret and prioritize public values across different contexts. However, we need more work to explore and apply the eGovWSF in other parts of the world and in relation to other institutional settings and ideals to reveal its usefulness in different contexts.

To summarize our research approach, we distil e-government practice through an interpretative and constructivist hermeneutic approach by building on previous research and theorizations made in the IS and e-government fields. We unpack e-government practice into its distinctive elements and refine their meaning before presenting these elements as parts of a holistic whole. Given our focus and approach in this paper, we present and discuss the generic e-government model in a stepwise manner. Thus, we discuss some general government characteristics in Section 4 before turning to what we perceive as e-government's main elements in Section 5.

4 General E-Government Characteristics

The term e-government refers to public sector organizations' use of information systems to transform public administration and services (Lenk, 2002), also labeled digital government. At the transformation's core lies a transition from manual and paper-based work and procedures to automating and digitalizing work processes, communicating with citizens through Internet-based communication channels, and

making public records and data available online. More recent developments include governments' use of data analytics, artificial intelligence (AI) applications, and various forms of sensor technology; often discussed in terms of making government *smart* (see Kankanhalli, Charalabidis & Mellouli, 2019).

In describing e-government early on, McClure (2000) stated that it refers to "the government's use of technology, particularly web-based Internet applications to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities" (p. 3). Historically, e-government initiatives have often involved (but have not been limited to) developing and implementing digital interfaces to public services (Lindgren & Jansson, 2013). In fact, the transition stems from both political and economic initiatives that focus on fulfilling political and more internal efficiency-/effectiveness-driving goals. In practice, e-government initiatives have found it easier to address internal goals since they have mostly focused on increasing public organizations' internal efficiency rather than increasing democracy and governmental transparency (Axelsson, Melin, & Lindgren, 2010). In recent years, we have seen calls for more balanced approaches in the e-government field that acknowledge different values and crossroads between, for example, IS and political science (Melin & Wihlborg, 2018). Hence, we need to acknowledge the particularities in the public sector when discussing the e-government field.

Understanding e-government's characteristics must rest on knowledge about governments (public administrations) as a particular study domain. First and foremost, when we use European welfare democracies as the analytical starting point, the public ethos constitutes public administrations' most distinguishable feature, which means that they should operate in a way that serves all citizens. More specifically, we can understand the public ethos as meaning that public administrations need to 1) ensure comprehensive legal frameworks with different degrees of discretion, 2) balance democratic and economic values, and 3) ensure legitimacy and accountability through democratic decision making, the rule of law, and efficient output (Lindgren & Jansson, 2013). Thus, the law regulates actions and relationships between public administrations, citizens, and business, but they often vary in detail, formalization, and discretion (Lenk, 2002). Serving all citizens and ensuring legitimacy also entail that public administrations must balance contradictory and ambiguous goals (Lundquist, 1998).

Public administrations also differ from private organizations in that they serve citizens, not customers; a citizen has constitutional rights that public administrations must ensure through law and fair resource distribution (Fountain, 2001). These constitutional rights put pressure on public administrations regarding responsiveness, social inclusion, and equal treatment (Jansson & Lindgren, 2012). In other words, public administrations must deliver public services equally to all citizens and cannot hold them back for some citizens due to insufficient resources (Aberbach & Christensen, 2005). Public administrations also have obligations related to citizenship: they have a compulsory obligation to supply public service, and they do so in a closed market (or semi-closed market). For some public services, such as parental or unemployment benefits, only the public options exist. Moreover, citizens often lack the opportunity to exit the service (e.g., paying tax). Finally, various laws and directives heavily regulate public sector organizations, which leads to more bureaucracy (Boyne, 2002). Different public organizations sometimes adhere to different legal frameworks, and these legal frameworks sometimes involve ambiguities and contradictions, which makes cooperation between public administrations challenging. Similarly, being steered and financed based on political goals that external actors set naturally affect the way in which public sector organizations operate.

We cannot fully understand the e-government field's characteristics without reflecting on what values underpin how public organizations work. We can define public values as expressing "underlying purposes and motivations that are more enduring and deeply rooted than project goals" (Rose, Persson, Heeager, & Irani, 2015, p. 532). According to Bannister and Connolly (2015), the academic literature contains little on information technology and public sector values; however, "transparency" and "privacy" constitute two exceptions. Bannister and Connolly (2014) suggested a taxonomy of public values that one can use as a means to assess the impact that information technology in general or public e-services in particular have. Their taxonomy, which they built on Hood's (1991) taxonomy, contains 1) duty, 2) service, and 3) socially oriented values. The duty-oriented category includes the public administration's responsibility. The service-oriented category includes service to citizens (in their different roles), respect for individuals, transparency, effectiveness, efficiency, and responsiveness (Hood, 1991). The socially oriented category includes justice and fairness, equal treatment and access, respect, and safeguards to protect citizens' privacy and security, accountability, and impartiality. More recently, Rose et al. (2015) continued Bannister and Connolly's (2014) work on how public values affect and are affected by information technology. They analyzed the values

behind four different theoretical traditions in the public administration literature (bureaucracy, new public Management, public value management, and new public service) (Rose et al., 2015). They structured their analysis according to four recurrent ideals or value propositions for managing e-government in the public administration literature: 1) professionalism, 2) efficiency, 3) service, and 4) engagement.

In sum, public organizations serve citizens and help maintain a functioning society. They focus on providing public value, not maximizing benefits for individuals. As such, political goals govern and law and other legal directives heavily regulate public organizations. As such, organizations in the public sector operate based on a particular and exclusive set of values that we discuss above; these values differ from the values that underpin organizations that operate in the free market. These characteristics affect how we can understand initiatives to implement and use information technology in public organizations. In Section 5, we discuss how we adapted the WSF and depict the eGovWSF. We present each element in the model and illustrate how one can understand them in an e-government context.

5 Introducing the eGovWSF

Building on Alter's (2013) terminology, an e-government work system refers to a system in the public sector context in which human participants perform work (processes and activities) using information, digital technologies, and other resources to produce specific e-services for specific internal and/or external stakeholders, and for the good of the society. The eGovWSF pictorially represents an e-government work system via 12 elements that describe its form, function, and environment during relatively stable periods (even though incremental changes may occur during them). It is possible to scale the framework and, thus, use it to describe, explore, and analyze e-government work systems that differ in size and organizational level. For example, an e-government work system may comprise an IT-based initiative or project at the municipal, regional, or national level, or a cross-organizational e-government initiative related to, for example, open government data, smart city development, or public sector transformation through digitalization. We show the eGovWSF in Figure 2.

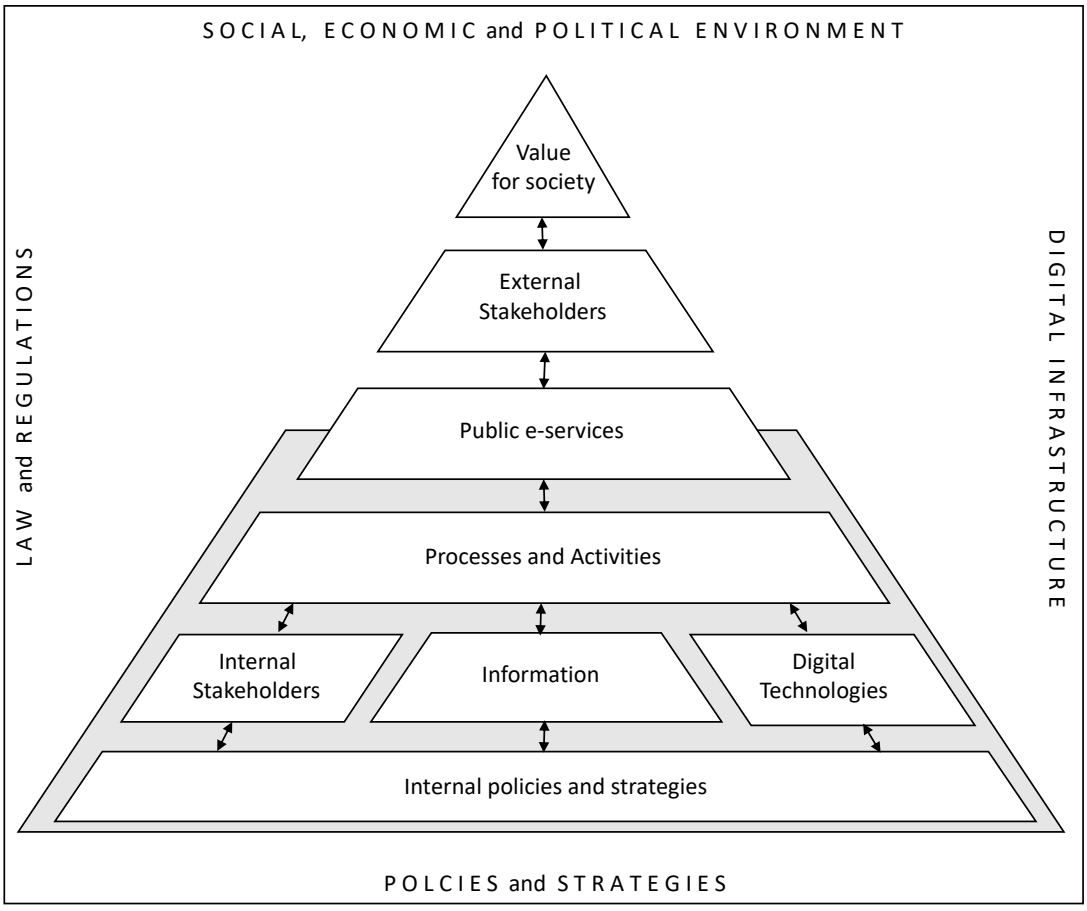

Figure 2. The eGovWSF: A Work System Framework for E-Government

As in the original WSF, the eGovWSF includes elements 1) largely outside the system (social, economic, and political environment; law and regulations; digital infrastructure; and policies and strategies), 2) partially inside and outside the system (public e-services, external stakeholders, value for society) and 3) completely in the system (processes and activities, internal stakeholders, information, digital technologies, and internal policies and strategies). The elements highly relate to one another and often lack clear boundaries in real-life situations. However, for the sake of clarity and argumentation, we treat them as clearly distinguishable elements in this paper. In modifying the original framework to create a more context-sensitive device, we added three new elements: 1) law and regulations, 2), value for society, and 3) internal policies and strategies. First, building on the public sector's particularities that we present above, we describe the elements in the model's outer parts. We can understand these elements as part of the e-government work system but also its backdrop. We then turn to the model's core elements.

5.1 Elements Largely Outside the System

The original WSF and our eGovWSF differ visually in that the latter's outer layer comprises four elements: 1) the social, economic, and political environment; 2) policies and strategies; 3) law and regulations; and 4) digital infrastructure. As a result, the model appears as square rather than triangular.

5.1.1 Social, Economic, and Political Environment

This element refers to the social, economic, and political circumstances, objects, or conditions that surround an e-government work system and affects its basic logic, effectiveness, and efficiency. Governance structures and public values also represent important parts of this element. We define the environment differently from how Alter (2013) define it. Alter's version relates to organizational, cultural, competitive, technical, regulatory, and demographics features of the context in which the work system operates. Moreover, stakeholders, policies, production and politics all make up the environment and influence a work system's performance. In the e-government context, we identify a need to differentiate between these various aspects more. We highlight the particularities that we discuss above and emphasize the public ethos and the political context. Furthermore, we emphasize the various aspects that influence e-government, such as citizen demographics, public values, cultural aspects, organizational history, political system, public budget, and trust in government.

5.1.2 Policies and Strategies

Policies and strategies include political intentions and visions (e.g., in policy documents) that influence an e-government work system's output and performance. Actors outside the work system, from various organizations on different societal layers, formulate these policies and strategies. In turn, actors internal to a work system often use the external policies and strategies that this element captures as a basis to formulate internal policies and strategies (see Section 5.3.5).

In the public sector, strategy documents (often called policies) represent a common way for public agencies to operationalize and relate general political directives to the specific circumstances of the organization. Thus, strategy documents serve to formulate and communicate concrete visions for these organizations based on political directives (see Van Assche, Beunen, & Duineveld, 2014). Hence, the political environment in which public organizations operate clearly affects what strategies pertain to e-government work systems. Alter (2013) emphasizes that strategies should align with one another and that work systems should support the strategies. While firms in the private sector may run their business based on some (more or less) clearly defined strategies and changes in their competitive environment, government organizations have to not only manage and adjust based on their appropriation directions (i.e., directives formulated by central government, including budget and objectives for the organization's activities) and internal strategies but also navigate between external pressures. We do not underestimate the complexity of competitive environments and private organizations' efforts in coping with them. However, we argue that signals from politicians may dynamically change based on new political regimes (after elections) and political decisions and policies, and that external pressure (influencing politics) from mass media and stakeholders in society increase complexity in public sector. In sum, we argue that one cannot entirely transfer strategic alignment ideals from the private sector to governmental organizations. Rather, in the public sector, contradictory views and strategies from various stakeholders are important parts of the democratic system in order to maintain the political influence on public organizations (Rose et al., 2015). Hence, governmental organizations need to put more effort into handling and absorbing conflicting ideals, ideas, and strategies than aligning strategies from a business-oriented perspective.

5.1.3 Law and Regulations

Law and regulations include constitutional law and regulations that steer and constrain an e-government work system's output and performance. We added this element to the model. We do not claim that private organizations can operate however they want without legal limitations. Rather, we emphasize that public organizations face and need to adhere to more regulations than private organizations. The WSF includes regulations in the environment element. Considering that various laws and directives heavily regulate public sector organizations, we differentiate this element and make it clearly visible in the framework. This element includes laws that mandate the form government takes and what services the government provides, regulations about e-government initiatives, privacy, and laws that mandate how organizations need to handle data (e.g., The General Data Protection Regulation (GDPR) in a European Union setting).

5.1.4 Digital Infrastructure

Digital infrastructure includes relevant technical-, data-, and information resources that an e-government work system uses. The element refers to technical and information resources that are shared with other work systems and, therefore, exist outside the work system itself. In this element, we side-step Alter's (2013) original wording and add "digital" to his "infrastructure" element in order to emphasize e-government's digital aspects. In an e-government context in particular, public organizations need to deal with issues related to accessing and sharing digital infrastructure. While infrastructural elements have similar importance and one should carefully consider them as well when analyzing private sector organizations, we argue again that business organizations in general and government organizations differ in many respects. Interoperability (and, by extension, open standards) poses a core concern in the public sector. Interoperability and open standards constitute mandatory requirements that influence how one develops and manages all e-government work systems. Similarly, public sector organizations adopt a layered infrastructure. In a layered infrastructure, a government may expect a certain public sector organization to define and deliver subcomponents at one level for other public organizations or even third parties (e.g., application developers on a commercial basis) to re-use and involve in other organizational contexts. We moved the infrastructure from the bottom of the triangle in the original model to a vertical element in our squared model to illustrate how infrastructural elements influence all other elements, not only the internal organizational and technical elements as Alter (2013) indicates. Moreover, digital infrastructure includes elements such as communication infrastructure, broadband coverage, Internet uptake, and data bases, which all affect an e-government work system.

5.2 Elements Partially Inside and Outside the System

We now turn our attention to the elements partially inside and partially outside an e-government work system: 1) value for society, 2) external stakeholders, and 3) public e-services.

5.2.1 Value for Society

This element refers to the value that an e-government work system's output and performance creates for society. Value may include equal access to public service, fair and equal treatment, efficient and effective output, transparency of government, and democratic decision making (see Rose et al., 2015). Alter (2013) placed customer satisfaction at the top of the WSF, which means that work systems exist to produce products and services for their customers. Carter and Belanger (2005) express similar thinking in defining e-government as IT that should "enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies" (p. 5). However, we understand e-government work systems as having further purposes than to produce services to citizens. Looking at e-government strategies in the European context (e.g., European Commission, 2016), e-government constitutes a means to 1) improve citizens' interactions with the government, 2) make governmental organizations more efficient and effective, and 3) increase government transparency and create a more democratic society (e.g., by supplying the means for stakeholders to participate in policy processes).

5.2.2 External Stakeholders

External stakeholders refer to the intended users of the public e-services that an e-government work system delivers. External stakeholders include citizens, businesses, non-profit organizations, other governmental institutions, and lobbyists (see Rose, Flak, & Sæbø, 2018). As we discuss in Section 5.2.1 above, Alter (2013) positions customers at the very top of his model and, thereby, illustrates that work systems ultimately focus on ensuring and satisfying customers. One must understand the customer element differently in the e-government context compared to a private context. For instance, e-government initiatives often lack clear-cut customers; rather, these initiatives target many different external stakeholders. Furthermore, the law often regulates relationships between various stakeholders and public organizations. A citizen fundamentally differs from a customer, which means that e-government initiatives must develop digital solutions and e-services with respect to the fact that citizens have both fundamental rights and obligations in relation to government.

5.2.3 Public E-services

Public e-services represent the output of an e-government work system. Public e-services function as channels for communication and information exchange between the government organization and its external stakeholders and can build on various forms of digital technologies (e.g., SMS, Web applications, social media, Web portals, etc.). Public e-services involve user interaction and input to various degrees, ranging from services requiring manual input from external and/or internal stakeholders to services comprising fully automated information exchange. As such, public e-services can take on different shapes and roles (see Lindgren & Melin, 2017) in an e-government work system. In the WSF, Alter (2013) refers to this element as products/services. We visibly modify the framework and focus on public e-service as what the e-government work system produces. The WSF considers products and services as mostly outside the work system. We emphasize that public e-services comprise systems and processes that one mostly finds inside the work system; the part of the e-service that external stakeholders can see often merely represents “the tip of the iceberg” (Lindgren & Jansson, 2013). For this reason, we placed this element partly inside and partly outside the work system.

5.3 Elements Completely in the System

Lastly, we turn to the elements completely inside the e-government work system: 1) processes and activities, 2) internal stakeholders, 3) information, 4) digital technologies, and 5) internal policies and strategies. In Figure 2, these elements appear in the grey frame.

5.3.1 Processes and Activities

This element refers to processes (clearly defined steps) and activities (discretion and improvisations) that provide public e-services to external stakeholders. Bureaucratic ideals affect what form these processes and activities take and how they perform. Processes and activities in an e-government work system include case-handling processes, routines, and internal workflows. In relation to the original WSF, we made minimal changes in defining and conceptualizing this element.

5.3.2 Internal Stakeholders

Internal stakeholders refer to employed or contracted people who contribute to an e-government work systems’ output and performance through direct or indirect participation in the work system’s processes and activities. Alter (2013) refers to this element in the original WSF as participants, which includes everyone involved in the work system. We changed the label of the element to stress that internal stakeholders are identified in relation to the elements completely in the system. Internal stakeholders include case workers, consultants, IT staff, digital officers, managers, business developers, and so on.

5.3.3 Information

This element refers to information and underlying data that processes and activities in an e-government work system use, create, capture, transmit, store, retrieve, manipulate, update, display, and/or delete. Information in an e-government work system includes citizen records, taxation data, demographic statistics, transportation information, public health records, and so on. On a general level, we consider the information and digital technology elements (see Section 5.3.4) to be similar for public and private organizations; thus, we only minimally altered how the WSF defines them.

5.3.4 Digital Technologies

This element refers to hardware and software that an e-government work system uses. We added "digital" to the original element in the WSF to emphasize e-government's digital context. Digital technologies include systems used for internal processes and activities and for public e-service delivery. The technology can support manual processes or be semi- or fully automated. However, although technology represents an important element in e-government, the public sector context constitutes the key factor that differentiates the design, delivery, use and impact of information technologies in e-government, not the technology itself.

5.3.5 Internal Policies and Strategies

Internal policies and strategies include intentions and visions for an e-government work system's performance and output. Internal policies and strategies are formulated by internal stakeholders and, in turn, influence the use and design of information and digital technologies. Examples include internal IT strategies, internal digitalization agendas, and internal value systems for public service delivery. As we discuss in Section 4, various laws and external directives (from government) often influence public sector organizations. Unlike business organizations, public sector organizations typically need to conduct more work to operationalize strategies into relevant internal policies and strategies that can help them execute their services and processes to fulfill the directions. This work often involves value conflicts between different goals from different stakeholders (Parsons, 1995). We added this element to the eGovWSF to illustrate the importance of these internal documents steering the e-government work system. In Table 1, we define and give examples of the elements in the eGovWSF.

Table 1. Definitions and Examples of the Elements in the eGovWSF

Elements of eGovWSF	Definition	Examples
Social, economic and political environment	The social, economic, and political circumstances, objects, or conditions that surround the e-government work system and affects its basic logic, effectiveness and efficiency.	Citizen demographics, public values, cultural aspects, organizational history, political system, public budget, trust in government.
Policies and strategies	Political intentions and visions (e.g., in policy documents) that influence the e-government work system's output and performance. Actors outside the work system, from various organizations on different societal layers, formulate these policies and strategies.	White papers, e-government agendas (on transnational, national, and federal level), agency specific policies and strategies concerning e-government, appropriation directions from governments.
Law and regulations	Constitutional law and regulations that steer and constrain the e-government work system's output and performance.	Law concerning what services the government must provide, regulations about service eligibility, information security, privacy, and data managment (e.g., the EU Data Governance Act).
Digital infrastructure	Technical-, data-, and information resources, used by the e-government work system, that exist outside the system and is shared with other work systems.	Communication infrastructure, broadband coverage, internet uptake, databases.
Value for society	The value that the e-government work system's output and performance create for society.	Public service delivery for all citizens, fair and equal treatment of citizens, efficiency and effectiveness of public sector organizations, transparency of government, democratic participation.
External stakeholders	The intended users of the public e-services that the e-government work system delivers.	Citizens, businesses, non-profit organizations, other governmental institutions, lobbyists.
Public e-services	The output of the e-government work system, that function as channels for communication and information exchange between the government agency and its external stakeholders.	Solutions can build on various forms of digital technology (e.g., SMS, applications, social media, Web portals).

Table 1. Definitions and Examples of the Elements in the eGovWSF

Processes and activities	Processes (clearly defined steps) and activities (discretion and improvisations) that provide public e-services to external stakeholders.	Case-handling processes, internal work flows.
Internal stakeholders	Employed or contracted people who contribute to the e-government work systems' output and performance through direct or indirect participation in the work system's processes and activities.	Case workers, consultants, IT staff, different digital officers, managers, business developers.
Information	Information and underlying data that processes and activities in the e-government work system use, create, capture, transmit, store, retrieve, manipulate, update, display, and/or delete.	Citizen records, taxation data, demographic statistics, transportation information, public health records.
Digital technologies	Hardware and software that the e-government work system uses.	Systems and services used for internal processes and activities, and for public e-service delivery. The technology can support manual processes or be semi- or fully automated.
Internal policies and strategies	Intentions and visions for the e-government work system's performance and output.	Internal IT-strategies, internal digitalization agendas, internal value systems for public service delivery.

6 Discussion and Implications

In this paper, we present a comprehensive model that can help researchers to 1) enter the e-government field, 2) understand what the field mainly studies in a distilled way, and 3) reflect on further research in the field. We show how researchers can enter the e-government field and understand what it mainly studies in the sections above. Hence, we now turn to the eGovWSF's nature and how researchers can use it to reflect on connections and tensions between the elements and conduct further research.

Researchers can use the eGovWSF as a generic framework to describe, analyze, and to some extent explain e-government practice in various sizes, countries, institutional settings, and organizational and governmental levels. First and foremost, the framework constitutes a descriptive tool that researchers can use to structure and decompose e-government initiatives into their various elements. We intentionally kept the number of elements as low as possible; thus, we acknowledge that one can further unpack all elements in the framework to reveal complex structures and phenomena that one could analyze in their own right. This characteristic makes the framework scalable; researchers can use it to summarize an e-government initiative or as a starting point to more deeply analyze individual elements while still acknowledging the overall picture. Moreover, the eGovWSF emphasizes the need to approach e-government initiatives from a socio-technical perspective (Mumford, 2006) and, thus, pay equal attention to both their technical and the human subsystems and how they relate to the organizational design. Finally, the framework accommodates discussion about the tensions between and within the various elements in e-government initiatives. Hence, researchers can use the eGovWSF to better understand the potential conflicts and challenges between various elements (e.g., between internal and external strategies, between objectives from various external stakeholders, or between the internal and external perspectives on what to achieve by introducing e-government projects). Researchers can also combine the descriptions that they generate using the framework with other theoretical lenses for more normative purposes, such as to help evaluate e-government initiatives.

Researchers can also use the eGovWSF to explain how, why, when, and where e-government practice takes place (see Whetten, 1989; Gregor, 2006). However, one should understand the explanatory dimension in terms of a non-positivistic perspective. We do not argue that the model indicates causal relationships; rather, the way in which we define the sub-elements explains how and why e-government work systems differ from work systems in general (as Alter's (2013) generic framework indicates). As such, we suggest that educators can use the eGovWSF for teaching purposes at various levels, which includes graduate level. The WSF has (according to Alter himself) had extensive influence on teaching and students' work (Alter, 2013). We expect to be able to include the eGovWSF in teaching to explain key elements in e-government, which would allow students to better understand the e-government domain. First, the eGovWSF allows for discussion on the differences and similarities between public and private organizations. In our own experience in lecturing students in the e-government field, we have found that

students often find public sector organizations to be slow and non-efficient about adopting digital technologies without reflecting on why. This impression also sometimes dominates among stakeholders who work in the field (e.g., both junior and senior consultants). Our framework can hopefully guide students to understand that this inertia partly results from the domain's complexity and the fact that political institutions (as bureaucracies) should have their say on how initiatives to digitalize the public sector should be designed and implemented. Hence, while we at first glance may find public sector organizations slow, it results from these organizations' conscious design.

Conceptual frameworks like the one we present in this paper always contains limitations. First, in Section 3, we already acknowledge the European influence on how we understand government. On the other hand, the original WSF had a different influence (i.e., the United States). In this paper, we do not investigate these influences on how one understands and uses the model. Furthermore, researchers in other world regions may interpret the eGovWSF's main elements differently. Thus, when applying the eGovWSF, researchers need to be sensitive to particularities in different national, cultural, and political contexts that may influence the environment, outcome, and the inner logic and workings of e-government work systems. We attempted to capture these aspects in the eGovWSF but explicitly stress the need to "translate" the framework's generic elements to specific settings when using the framework as an analytical tool.

Next, the framework we generated could easily inherit the criticisms that the original WSF has attracted. Thus, as discussed above, one could perceive it as too simplistic and generic. However, we focused on achieving simplicity and see the framework's simplified and ease of use design as a strength. Furthermore, the framework may also inherit the implicit assumption that all public administrations organize e-government work systems internally. While true in in many countries and settings, we can also see more loosely organized e-government work systems, such as where government (though possibly also other) stakeholders use Facebook and other externally and privately provided systems for e-government purposes (Wahid & Sæbø, 2015). We acknowledge that we may need more work to elaborate on whether our framework can describe situations with more intense collaboration between public and private organizations to address issues such as sharing economy, collaborative consumption, and the role that non-governmental organizations play in the e-government domain. Finally, we acknowledge that our framework may de-emphasize digital technology's importance in e-government practice (see Orlikowski & Iacono, 2001). Thus, while only one (internal) element among the 12 in our framework represents digital technology, we nevertheless strongly believe that digital technologies represent a critical element in e-government initiatives and a key driving force from which innovative ways of transforming governments and public sector occur.

7 Conclusions and Future Research

In this paper, we conceptualize e-government practice via a generic framework called the e-government work system framework (eGovWSF). Researchers can use the framework to describe, analyze, and explain e-government work systems that differ in size and organizational level. As such, the framework can help researchers, students, and practitioners describe what e-government is and to some extent explain how, why, when, and where e-government takes place. The eGovWSF acknowledges the e-government context's particularities and comprises 12 defined elements outside, partially inside and outside, and inside e-government work systems.

Our work has an exclusively conceptual nature. Further research needs to apply the framework empirically to evaluate its usefulness. Empirical cases that contain other governance models and public values can challenge some underlying assumptions in our work, such as the welfare state and its services directed towards citizens. Furthermore, we expect empirical work that originates from various contexts to be able to improve our knowledge about and awareness of the role that context plays in the e-government domain. In addition, work needs to further assess the eGovWSF's usefulness in the classroom. However, in initially validating the eGovWSF with students analyzing e-government projects as part of their education, we found that the framework is useful to provoke discussion on how the various elements fit together, where the difficulties reside, and which elements conflict.

We also need additional work that provides more predictive contributions concerning e-government, such as to better explain the dynamics in e-government initiatives. Such research may explore other parts of Alter's (2013) work system theory, such as the work system lifecycle model. Moreover, we need more work to explore a potential future in which providing government services involves more loosely coupled

systems (e.g., social media) and more intense collaborations between public and private organizations. We believe that future transformation and innovation in the e-government domain may challenge the traditional labor division between tasks that public sector organizations perform and tasks that other stakeholders conduct. If so, we would require work to further address the potential consequences on the elements in e-Government work systems and the relationship between them. Finally, we need future research to elaborate on the roles that digital technologies may have for altering the eGovWSF. For instance, must digital technologies necessarily reside inside the system? What happens if and when one externalizes the digital technology, such as by using different commercial platforms that Google, Facebook, Apple, and Microsoft provide? Will the use of new and disruptive technologies such as AI, machine learning, and the Internet of things change the dynamics in the eGovWSF?

Much existing research that has discussed the nature of e-government appeared many years ago now (e.g., Andersen et al., 2010; Dawes, 2009; Dawes, Pardo, & Jiang, 2008; Grönlund, 2004; Heeks & Bailur, 2007; Irani, Love, Elliman, Jones, & Themistocleous, 2005; Yildiz, 2007) with some notable exceptions (e.g., Luna-Reyes & Gil-Garcia, 2014; Sandoval-Almazan & Gil-Garcia, 2016). We interpret the few recent studies on the topic as the field having moved on from discussing e-government's essentials, which indicates our work's relevance. We argue that the e-government research field has (to some extent) neglected the need for ongoing discussions and awareness about what the field addresses. When we next receive requests from students to explain what e-government involves, what distinguishes e-government research from other research areas, and how e-government research connects to IS research, we can use the framework we introduce here to provide answers and generate constructive discussion and reflection. We also hope that the framework generates discussion and reflection among scholars as well.

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