

# E-Government Development and Organizational Structures

## A Critical Review of Technical Rational and Socially Embedded Perspectives

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### ABSTRACT

As organizations continue to apply IT in order to provide more accessible and convenient digital services, citizens expect the same level of accessibility from government services. As a result, governments are increasingly participating in the “e-government movement”. However, there is a debate regarding how to successfully implement this concept and authors present different theoretical perspectives regarding how governments can move towards a “fully functional electronic government”. This critical review presents and compares these perspectives. Technical rational perspectives provide stepwise guidelines for how governments can develop their structures to better accommodate e-government and alter their organizational forms accordingly. In contrast, socially and politically embedded perspectives emphasise gradual change, take contextual aspects into consideration and see IT as a means to enforce and sustain political and social values. This review seeks to outline the core assumptions within these perspectives and evaluate the supporting arguments and empirical evidences to assess their strength and suitability.

### Introduction

The significance of information technology and digital innovation within organizations has accelerated rapidly in the last few decades. This trend results in higher expectations towards the availability of electronic services provided through the internet and web-based technology (Margetts and Dunleavy, 2012). Digital services are perceived as more convenient (Layne and Lee, 2001) as opposed to traditional paper-based procedures or face-to-face interactions. As people have access to digital services through private firms, they expect public services to offer digital alternatives as well. It is therefore difficult for governments not to take part in the “e-government movement” (Layne and Lee, 2001).

Despite recent initiatives, Layne and Lee (2001) suggest that most governments have not successfully implemented a fully functional electronic government. Moreover, research shows that 85% of e-government projects fail (Cordella, 2007). As a result, there is an ongoing academic debate regarding the causes and possible solutions for this. Scholars present different perspectives regarding e-government development: technical rational theories, that believe government practices need to be altered to favour e-government and accordingly provide guidelines; and socially and politically embedded perspectives, that consider the institutional context and see the use of IT as a means

to enforce and sustain political values. This review looks at literature within these perspectives in order to evaluate strengths and weaknesses in the core assumptions and supporting arguments.

To better evaluate the literature, we need to clarify how to define the term “e-government”. Layne and Lee define e-government as the use of technology to enhance service delivery and information assimilation. Other authors further enrich this description by acknowledging the strategic value (Andersen and Henriksen, 2006), organizational setting (Cordella and Tempini, 2015) and the institutional forces (Luna-Reyes and Gil-Garcia, 2014; Cordella and Iannacci, 2010) involved in the introduction of ICT to the public sector. Taking these views into consideration, this paper defines e-government as the use of ICT to increase both efficiency and effectiveness in public sector organisations.

The paper is organised as follows: The next section provides a brief description of e-government. This is followed by a review of the assumptions and arguments within the technical rational perspective, including the guidelines and organizational forms that this perspective suggests for moving towards e-government. In this context the focus is on the managerial rationality. Moving further, the next section introduces the politically and socially embedded perspective and evaluates the theoretical assumptions and evidences in a similar manner. Because of the nature of the topic, this section mainly focuses on the political aspects within this

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perspective. Finally, the conclusion presents the most evident strengths and weaknesses of the two sets of perspectives and suggests future use.

### 1. Technical Rational Perspective

A series of authors present theoretical models that describe development stages to help realize the “ideal” state of e-government, through planned action and predefined guidelines (Klievink and Janssen, 2009; Andersen and Henriksen, 2006; Layne and Lee, 2001). Some authors further present alternative organizational structures to better accommodate this IT-enabled organizational change, and realize the full potential of e-government (Klievink and Janssen, 2009; Andersen and Henriksen, 2006; Reddick, 2004; Layne and Lee, 2001). This section discusses these technical rational perspectives in order to evaluate their underlying assumptions.

#### 1.1 Development – Maturity Models

The literature describes best practices and models to provide guidelines for evolving towards e-government. These are termed as “maturity models”, where the level of maturity relates to the institution’s ability to engage in e-government (Andersen and Henriksen, 2006). Despite proposing a variety of models, they share the common aim of a stepwise restructuring of public institutions (Klievink and Janssen, 2009; Andersen and Henriksen, 2006; Layne and Lee, 2001). Some widely recognised models are Layne and Lee’s four stage model (2001) and the Public Sector Process Rebuilding Model (PPR) (Andersen and Henriksen, 2006).

Layne and Lee’s model consists of four “Stages of Growth” (2001). The various stages are: cataloguing, making information available online; transaction, moving towards two-way interactions; vertical integration, across different government levels; and horizontal integration, across different functions. The PPR model differs from this in that it claims to consider customers (citizens) and organizational activities to a larger extent (Andersen and Henriksen, 2006).

An underlying assumption in regard to these models is that the development of e-government requires strategic planning and will result in major changes, to the extent that the government service itself will be redefined (Andersen and Henriksen, 2006; Layne and Lee, 2001). This assumption is reasoned by comparing the development with the way e-commerce has altered the private sector (Layne and Lee, 2001). Accordingly, the assumption seems to be based on the belief that a technology-driven change in the public sector will unfold similarly to that of the private sector. However, the literature does not make it evident whether a similar approach is suitable for e-government. A valid point made by Cordella (2007) in this regard is that this cannot be taken for granted as public and private sector organisations serve different purposes. Specifically, the reference to citizens as customers is widely criticised as it does not account for the distinct relation between citizens and

the government, as opposed to the relation between a consumer and a private supplier.

Another core assumption made in these models is that e-government is an evolutionary phenomenon that requires stepwise development (Klievink and Janssen, 2009; Layne and Lee, 2001). For instance, Layne and Lee (2001) present linear stages that describe the necessary steps in this evolution towards the vertical and horizontal integration of government services. This aspect highlights two assumptions: firstly, that governments may only be classified within the defined stages; secondly, that each step is directly dependant on the completion of its predecessor.

In this regard, some authors attempt to justify this stage-wise classification of e-government development, and the practical applicability of these stages. Reddick (2004) presents findings from e-government practices in New Zealand, that show that most governments initially aim for an online presence. Similar research from practices in the US and Spain reveal the availability of one-way information as most common. Accordingly, this can be assumed as the first step. Moreover, findings from the US show modest movements towards two-way interaction with citizens, which indicates that this could be the next step governments naturally move towards. However, most governments are still in these early stages (Andersen and Henriksen, 2006; Reddick, 2004; Layne and Lee, 2001) and there is a lack of evidence to validate the subsequent steps. Additionally, the current state of governments, as presented in empirical evidences, does not give specific indications about future movements and how feasible a vertical and horizontal integration is.

Based on these findings, it seems that although maturity models provide useful guidance, empirical evidence suggests a possible design reality gap, which makes the descriptions of future stages mere predictions, normative models with a lack of evidence.

Furthermore, these models characterise the main factor for success and the ideal situation as the availability of efficient, digital, vertically and horizontally integrated government services (Andersen and Henriksen, 2006; Layne and Lee, 2001). It is argued that this will provide more accessible information and digital services, thereby reaching customers more efficiently (Andersen and Henriksen, 2006; Layne and Lee, 2001). A valid point made in this regard is that citizen acceptance will grow as users will have a single-point of contact (Klievink and Janssen, 2009; Andersen and Henriksen, 2006; Layne and Lee, 2001). However, this suggests that the success of e-government initiatives is only measured in terms of efficiency, not effectiveness. As a result, there seems to be an unjustified lack of discussion on the effectiveness of public services. Also, there is little mention of political compatibility towards horizontal and vertical integration and any challenges that could result from this.

Moreover, other aspects related to user acceptance, such as universal access, privacy and trustworthiness

are not evident in the suggested final stage of the ideal e-government state. Layne and Lee (2001) acknowledge some of these aspects, however their proposed model does not incorporate them.

Finally, the literature does not seem to describe how generic these models are and whether they are suitable for all types of governments and government relations. Based on empirical findings, Reddick (2004) suggests that the expected progress is most evident in the government to business relationships (G2B), not in relation to citizens (G2C). This indicates that the models are perhaps more suitable for certain aspects of e-government.

#### 1.2 Organizational Forms

Theories within the managerial rationality discuss organizational forms and governance structures to increase efficiency and in this way take advantage of the full potential of IT (Greve, 2015; Margetts and Dunleavy, 2014; O’Reilly and Reed, 2010; Dunleavy, 2005). Two of the organizational forms that authors discuss are New Public Management (NPM) and Digital Era Governance (DEG).

NPM is a dominant managerial practice from recent times (Greve, 2015; Margetts and Dunleavy, 2014; Dunleavy, 2005; Heeks, 1999). This has been described as a decentralized organizational structure that aims to reinvent the government administration by considering citizens as customers in a market-oriented setting, and introducing concepts such as competition to increase efficiency (Margetts and Dunleavy, 2014; Cordella 2007). There is also an emphasis on the role of technology in the process of reorganization. Some authors explain that NPM came as a reaction to the perceived weaknesses of the bureaucratic structure (Cordella, 2007; Heeks, 1999). However, it is argued that NPM was not as revolutionary as expected, and has even resulted in negative effects (Greve, 2015; Margetts and Dunleavy, 2014; Cordella, 2007; Dunleavy, 2005). In response, Dunleavy (2005) proposes digital-era-governance (DEG) as the successor of NPM.

The main concepts of DEG include reintegration, holism and digitalization (Dunleavy, 2005). Through reintegration it proposes to rollback parts of the decentralization of NPM (Dunleavy, 2005). The reintegration and holism concepts also complement the idea of vertical and horizontal integration suggested by the maturity models (Dunleavy, 2005; Andersen and Henriksen, 2006). Additionally, DEG emphasises managerial change revolving around IT, and it is argued that this will increase efficiency and improve the service level (Margetts and Dunleavy, 2014; Dunleavy, 2005). They further expect the second wave of DEG to introduce disruptive changes.

A common aspect of these ideas is the underlying concept of managerialism: “the belief that all aspects of organizational life can and should be managed according to rational structures” (Wallace and Pocklington, 2002, p.68, cited by O’Reilly and Reed, 2010, p.962). These structures reflect the aim of

increased efficiency and productivity as a result of IT-based managerial change, justified by the belief of managerialism (O’Reilly and Reed, 2010). Moreover, these concepts support the underlying assumption that there is a need to reorganize in accordance with digital changes, towards more rational modes, to take advantage of the full potential of IT (Greve, 2015; Margetts and Dunleavy, 2014; Dunleavy, 2005).

It seems that this assumption is driven by the perception that the full potential of e-government cannot be realized through the inefficient hierarchal form, as this is not suitable for adapting to the digital change (Greve, 2015; O’Reilly and Reed, 2010; Cordella, 2007). This criticism identifies inefficiencies within the complex tiers created by hierarchal forms (Dunleavy, 2005). However, there seems to be a lack of justification for why these shortcomings are presumed to be directly related to bureaucracy. In this regard, Cordella (2007) suggests that any inefficiencies related to bureaucratic forms are a result of increased complexity, and suggests improving the structure, instead of altering its nature. Also, the fact that DEG aims to rollback some of the changes of NPM’s disaggregation (Dunleavy, 2005) indicates that the once perceived required change might not have been necessary. Moreover, structures proposed after NPM are mainly evolved through the identified shortcomings of NPM. This indicates that organizational practices have an experimental nature, and raises the question of whether the new proposed forms will result in the predicted way.

Furthermore, an assumption in regard to NPM is that concepts from the private sector can be adopted in the public sector (Dunleavy, 2005). For example, automating processes to increase efficiency, emphasising the importance of performance management (O’Reilly and Reed, 2010). However, similarly to technical rational theories for development, the reviewed literature does not seem to consider the different nature of public services (as opposed to private), and it is not clear whether these concepts are suitable for e-government. For instance, factors such as universal access and service reliability are identified as more critical for public services (Dunleavy 2005; Layne and Lee, 2001) than for private companies. DEG’s concept of digitalization and a full digital mode (Dunleavy, 2005) overlooks the possibility of citizens without access and could therefore be in conflict with the concept of universal access.

#### 2. Reflective Reasoning

As opposed to technical rational theories, the socially embedded perspective considers the broader institutional context and organizational practices, and proposes an incremental approach to development. Building on this notion, the literature within this perspective further describes organizational forms where the focus is towards public institutions’ function as a political entity to enhance democratic values through e-government (Navarra and Cornford, 2012; Cordella, 2007).

## 2.1 Development – Institutional and Social Factors

In contrast to technical rational perspectives, socio-technical theories do not provide specific guidelines and models for development. Instead they present the development of e-government as a continuous and incremental process (Luna-Reyes and Gil-Garcia, 2014; Norris and Reddik, 2013; Cordella and Iannacci, 2010; Bretschneider, 2003), taking into consideration the wider social context. However, it is also acknowledged that this gradual change towards e-government adoption can eventually result in radical changes (Norris and Reddik, 2013).

The primary assumption within this perspective is that e-government projects cannot be planned according to technical rational stage-wise models due to complex interactions between institutional factors, political arrangements, organizational structures and the technology involved (Luna-Reyes and Gil-Garcia, 2014; Cordella and Iannacci, 2010; Cordella, 2007; Bretschneider, 2003). Cordella and Iannacci (2010) argue that there is a need to focus on this intrinsic complexity, instead of following generic best practices.

Some authors further argue that this complex and dynamic nature of e-government can result in unanticipated changes, which is why an incremental process that allows improvements is more suitable (Luna-Reyes and Gil-Garcia, 2014; Norris and Reddik, 2013; Cordella and Iannacci, 2010). It is explained that this will also allow continuous evaluation and thereby assist in further development (Luna-Reyes and Gil-Garcia, 2014). Norris and Reddik (2013) sustain this assumption with empirical evidence from US governments, where their findings indicate that the predicted stage-wise development was not observed, having instead been adopted an incremental type of development. Moreover, a case study by Luna-Reyes and Gil-Garcia (2014) illustrates how continuous change and improvement in a project for development of a government portal resulted in a positive outcome.

This empirical evidence partially validates aspects of socially embedded reasoning. This approach, however, is also criticised for its abstract nature. Moreover, it has been stated that the outcome depends on contextual factors (Luna-Reyes and Gil-Garcia, 2014; Cordella and Iannacci, 2010), the success of one or two of these projects might not be a proper indicator of the validity of this approach.

Another assumption within this perspective is that the development process involves a two-way interaction and mutual shaping between technology and institutional and organizational settings (Luna-Reyes and Gil-Garcia, 2014; Cordella and Iannacci, 2010). It has been argued that this two-way interaction affects the implementation and perception of IT and the outcome of e-government development projects (Luna-Reyes and Gil-Garcia, 2014; Cordella and Iannacci, 2010). Cordella and Iannacci (2010) sustain this assumption and illustrate this reciprocal shaping through a case study of an e-government project in

England and Wales, where the system was affected by the environment and vice-versa.

The examples and case studies the reviewed literature describes validate the presented theories. Moreover, the literature illustrates a broader view by introducing institutional aspects. However, this view also does not seem to focus much on citizens' role in the development process.

## 2.2 Organizational Forms – Reflecting Political Values

The literature within this perspective also discusses organisational structures for e-government. It is primarily emphasised that alterations in organizational forms need to consider the underlying values of the established structures (Navarra and Cornford, 2012; Cordella, 2007). Moreover, some authors highlight the importance of taking into consideration institutional aspects, as the value of technology depends on how it is put into practice (Cordella and Tempini, 2015). In this regard IT is described as a means to enforce political values. One such example is Cordella's proposed e-bureaucratic form which, he argues, enforces democratic values (2007).

The e-bureaucratic form is described as the use of technology to deliver services to achieve the main objectives of public institutions, such as enforcing democratic values of equality and fairness (Cordella, 2007). It is argued that although bureaucratic organizations have been criticised, they have succeeded in enforcing these values (Cordella and Tempini, 2015; Cordella, 2007). In this manner, the emphasis is not on bureaucracy as an organizational form, but on the democratic values it conveys. Cordella (2007) further states that any perceived inefficiencies in bureaucratic organizations are not due to the hierarchical structure, but the increased complexity from information overload.

Navarra and Cornford similarly present alternatives to the NPM managerial model. They introduce: "consultative models", which emphasise transparency and user involvement"; "participatory models", using IT to increase citizen involvement and democratic representation; and "disciplinary models", IT use to acknowledge the importance of e-government beyond goals of increased efficiency.

A primary assumption these organisational concepts reflect is that, as opposed to technical rational ideologies, the potential of IT is perceived to be more political than administrative (Navarra and Cornford, 2012). Some authors suggest that technology can be a "carrier" of political aims, and that e-government ICTs accordingly hold political properties (Cordella and Tempini, 2015; Navarra and Cornford, 2012; Ahn and Bretschneider, 2011; Cordella and Iannacci, 2010; Cordella, 2007). Moreover, these properties can be utilised to enforce democratic values, improve control, enhance transparency and increase citizen engagement (Navarra and Cornford, 2012; Ahn and Bretschneider, 2011; Cordella, 2007). Navarra and

Cornford (2012) sustain these arguments through examples of successful cases that have adopted these e-government models.

This assumption of the nature of e-government is contrasted against managerial ideas. It is argued that political properties are embedded in the existing forms and managerial theories underestimate the effects new structures will have on the underlying logic of the public administration, its function and e-government's potential to serve wider political purposes (Navarra and Cornford, 2012; Cordella, 2007). For instance, it is argued that, by introducing a market-like structure, NPM would differentiate between citizens and be in conflict with fundamental democratic values (Cordella and Tempini, 2015; Navarra and Cornford, 2012; Cordella, 2007). To sustain this argument, a logical reasoning is presented of how hierarchal structures enforce democratic values and how the introduction of market-like structures could challenge these values (Navarra and Cornford, 2012; Cordella, 2007).

Although these arguments are logically sound, there is little evidence that illustrates democracy being challenged as a result of novel managerial practices. For example, although some authors discuss unsuccessful implementations of NPM (Cordella, 2007; Dunleavy, 2004), the success is often measured towards goals related to efficiency and productivity. There is little evidence suggesting that this is due to the effects NPM has on the underlying democratic values.

## Conclusion

In conclusion, the theories presented in this paper describe alternative conceptualizations of how scholars suggest to develop e-government and organizational forms for the digital age. While technical rational theories provide useful guidance towards adoption of ICT in the public sector, socially embedded perspectives educate us in the underlying complexities and political factors that are involved in the underlying processes. In this manner, both sets of theories provide useful insights towards these aspects of e-government, and can be used alongside each other in order to get a broader view of the macro- and micro-processes involved. However, it is equally important to be aware of the weaknesses of these perspectives. As the paper highlights, the technical rational perspective generalises and attempts to predict future development, which can compromise its legitimacy, while concepts within the socially embedded reasoning describe abstract notions that often require contextual interpretation.

The focus of this review was mainly directed towards managerial and political aspects. Accordingly, perspectives related to user acceptance and the role of citizens in the development of e-government was not explored in detail, and may be subject to further research.

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