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Barriers to Networked Governments: Evidence from Europe[1]

REBECCA EYNON & WILLIAM H. DUTTON

ABSTRACT *Progress towards realizing the full potential of 'e-government'—using digital technologies to improve public services and government–citizen engagements—has been slower and less effective than the technologies' take-up in spheres such as e-commerce. Evidence from across Europe reported here, including an online survey and case studies, indicates a significant reason has been an overly narrow focus on substituting electronic for traditional services. Theoretical and empirical perspectives on barriers to e-government identified (e.g. poor coordination; workplace and organizational inflexibility) suggest greater attention should be given to supporting organization innovations to achieve maximum benefits from networking in the public sector.*

Keywords: digital government; e-government; information and communication technology; management and organization; network society; public services.

Introduction

The significance of implementing and successfully adopting digital information and communication technologies (ICTs) in public administrations has been recognized across the world.[2] For example the European Union (EU) has acknowledged that 'e-government' capabilities, together with associated organizational change and skills development,[3] could make a significant contribution to fulfilling its strategic social and economic goals.[4] This is possible because apt use of digital networks and technologies in the public sphere can benefit governments, citizens and businesses in many interrelated ways, such as improving the quality and efficiency of public services and their customization to citizens' needs.[5]

Some assessments of progress in e-government indicate that a degree of progress has been made in certain activities towards achieving potential benefits.[6] Such progress has, however, generally failed to meet expectations and has been relatively slow compared to the uptake of digital networks in business and other fields. In addition, researchers have identified a plateau of maturity for countries

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that initially led the way in e-government.[7] For instance, the UK Audit Office's Government on the Web project indicates that the gap between e-government and e-commerce use of online capabilities may have widened, after narrowing between 1999 and 2002.[8]

Attention has also been drawn to various constraints and blocks on e-government developments, such as poor usability, inadequate promotion of e-government capabilities or concerns about security and privacy.[9] This study has sought to advance the analysis of such barriers to e-government through two strategies. First, we synthesized existing research to generate a framework for identifying different types of barriers. Secondly, we have sought to bring to bear a stronger theoretical perspective by extending this analysis through a set of case studies and an online questionnaire completed by those involved in e-government initiatives.

The Network Society Perspective

The Internet, Web and related ICT advances (e.g. broadband and mobile technologies) have enabled new forms of networked, rather than hierarchical, organization and service provision in the evolving 'network society'.[10] Understood in this way, it is apparent that the emergence of a global digital 'cyber-infrastructure' is more than simply a substitution of electronic for paper and over-the-counter transactions. However, this has tended to be the emphasis in much e-government policy and practice, instead of focusing on wider and more profound possibilities for changing how governments can do what they do, in ways that could change everyday social, work and organizational routines around the world.[11]

Theory and research on the network society emphasize that the move to utilize ICTs is not simply a technical shift. Technology cannot be separated from social and organizational change. In fact, social and organization changes are often required to realize the potential of ICTs to reconfigure access to information, people and services. In contrast, much discussion of e-government places a focus on government 'going online' through websites and other forms of e-communication with its citizens. This has diverted attention from a more central issue: the potential for the Internet and related ICTs to enable new forms of networking among government agencies and services, such as through shared service provision or the reuse of government information.

This may be understandable because of the way much of governmental organization and structure has co-evolved with the development over centuries of laws and regulations that enshrine and embed organizational practices, processes and policy. However, the substitution approach has diverted attention from the need to rethink the organizational structure and dynamics of governmental administrative and service delivery in order to realize the potential of ICTs to enhance the provision and performance of the public sector.

For example, experience in private firms has demonstrated that the creation of a networked organization is likely to be crucial to achieving the full productivity and other benefits of ICTs. While business-to-consumer (b2c) e-commerce might be the most visible aspect of the networked firm, the use of ICTs to reconfigure the geography and organization of the firm has had the most central impacts on the payoffs gained from ICTs.[12] A failure to recognize the necessity of this organizational transition is a key reason why governments have not fully addressed organizational barriers to change.

The network society lens therefore focuses attention on the set of technologies, such as the Internet, that reshape access to people, services, technologies and other resources, in addition to information. This avoids weaknesses in the once-dominant notion of an 'information society' which arise from its prioritization of information as the iconic key resource. In contrast, the network society stresses how actors can reconfigure social and organizational relationships through the effective deployment of networked digital media to change the way services are delivered and administered. This has been employed in the business world to create global networked operations. These have altered not only the geography of organizations, but who does what within and between firms—thereby also reconfiguring what jobs are done, where and by whom. Parallel developments are likely in the public sector.

A Research Project to Identify Key Barriers to e-Government

The network society perspective outlined above was one factor shaping the planning and conduct of research for the European Commission's three-year Breaking the Barriers to e-Government project[13] reported here.

First, it helped to highlight that the so-far dominant media-substitution paradigm in e-government is a likely reason for the relatively limited diffusion and impact of e-government compared to the equivalent network-enabled transformations in e-commerce and many other activities, such as interpersonal communication (through e-mail, mobile phones, social networking websites, etc.) and the entertainment and news media. This substitution approach is illustrated by 'government going online' initiatives in which websites and e-mail substitute for face-to-face (e.g. over the counter) and paper-based media. It has also influenced e-government policies that separate the delivery of public services and citizen–government interactions from administrative support and arrangements. From a networked government perspective, these government–citizen and government–government networks are inextricably linked.

Successful activities within 'substitution' e-channels have contributed to some of the assessments indicating a fair degree of progress in e-government, such as in counts of the increasing numbers of government websites. However, the limitations of these steps forward are revealed through an understanding of how a transition to networked government models can realize much fuller benefits from using advanced cyber-infrastructures.[14] This is what suggests that the key barriers to gaining optimum benefits from e-government are likely to be those that hinder the transformation of organizations needed to take advantage of the diverse opportunities opened by digital networks. At the same time, there must be an awareness that these organizational changes could arouse particularly strong fears and resistance in traditional government cultures, where processes and work practices are usually based on strict hierarchies and jurisdictional boundaries that are anchored in legal-administrative traditions.

Rapid escalation in the use of broadband Internet and mobile capabilities has also boosted the communicative power of citizens, for example through advanced 'Web 2.0' social networking websites (e.g. YouTube, MySpace and SecondLife) and the growth in 'citizen journalist' bloggers.[15] This means politicians and government officials need to learn how to participate in the virtual network space around them, and can no longer regard government as the prime source of tools and systems in e-government and related e-democracy activities. When citizens go to a

search engine for health information, rather than to a government agency, the delivery of services is being transformed in ways that governments have not generally anticipated, accommodated or taken advantage of in redesigning services.

This understanding led the project to adopt a broad scope in its exploration of the organizational, social, economic and legal influences on the development and take-up of ICT-based capabilities in government administration, delivery of public services and other engagements with citizens, business and other institutions. In this context, we sought to identify the full range of factors that have become major stumbling blocks to ensuring the networked reorganization of government agencies and actors meets these requirements.

Analysis of the subsequent research reported here has articulated seven 'barrier categories' and their connections to organizational change. The majority of these categories include dimensions that are central to the networked government model, such as poor coordination across units and levels of government, organizational inflexibility and resistance to change in the workplace.

Structure of this Paper

The paper starts by outlining the project's aims and methodology. It then describes the seven barrier categories identified and focuses on the project's online survey that sought feedback to use in our barrier analyses. The survey highlighted the centrality of organization resistance and lack of organizational coordination—factors that reinforce the centrality of organizational transformation as key to realizing the benefits of the network society. The paper concludes by discussing the broader implications of the project's findings for exploring solutions to the problems created by these barriers.

Aims and Methodology of the Research

The Breaking Barriers to e-Government project was designed to investigate the major barriers to expanding effective e-government services, with a focus on institutional and legal aspects. Supported by the European Commission, it has focused on many issues specific to the EU, such as the implications of EU Directives affecting e-government issues (e.g. the Directive on privacy and electronic communications[16] and the 'e-signatures' Directive[17]). Each Member State is required to implement Directives in the way it deems to be most appropriate for its specific needs. Differences arising between Member States' laws, regulations and governance and institutional arrangements can then influence the pace of e-government development within each jurisdiction, as well as hampering trans-European coordination.

The project team realized early on that it should encompass the diverse range of issues raised by its network society conceptualization, within a broad spectrum of national, regional and cultural contexts. Its investigations have drawn on a variety of relevant approaches.

In the first 12 months of the study, the main effort went into mapping the landscape of barriers to e-government, particularly the legal foundations on which e-government systems are built. The range of methods employed included extensive literature reviews and consultation with a variety of experts, including e-government policy makers and officials, recipients of services, researchers and developers of related ICT systems. An expert group of about 30 e-government specialists from

a diverse range of backgrounds was established to provide focused support for such knowledge gathering, which also included workshops, meetings and an active project website.

Analyses of the key underlying legal issues provided the foundation for examining and identifying key barriers.[18] Seven of the eight legal dimensions explored were of general applicability: authentication and identification in online identity management; Intellectual Property Rights (IPR) and copyright in e-services; liability arising from a malfunction or inaccuracies in e-government services; privacy and data protection; public administration transparency through the wide availability of public sector information and open e-democracy processes; reuse of public sector information; and relationships between public administrations, citizens and other actors with a stake in e-government services. The other category of administrative law is specific to those European countries where the common law 'Anglo-Saxon' legal model does not apply and where certain formal guarantees are provided for citizens in activities where public bodies have significant power.

The first phase of reviews, discussion and detailed legal analysis led to an initial formulation of key barriers to e-government. These were further explored through an online survey[19] and a set of case studies.[20] The definition of the barriers and results from the research, particularly the survey, are the focus of the remainder of this paper.

Identifying the Main Types of e-Government Barriers

What is an e-Government Barrier?

In clarifying the definition of an e-government barrier, the project team wanted to be more precise than an everyday understanding of the term 'barrier'. It also required a definition that would be useful in discussion with public officials. This led to the development of a definition that positions the notion of a 'barrier' as an aspect of a larger integrated system, in a broadly analogous way to which blockages in water pipes can be barriers between the water supply network and consumer demand.

The degree to which perceptions of a potential barrier can themselves become real blockages was also considered, for example when perceived fears about government surveillance using computer databases undermine trust in e-government services, even when those fears are unjustified for a particular application. Other aspects examined included differences between barriers to demand (e.g. lack of awareness of e-government benefits among potential users) and those inhibiting supply (e.g. problematic collaborations between public administrations and commercial ICT suppliers in public–private projects). The undermining of traditional distinctions between supply and demand by the convergence of various digital ICT applications and channels is important in this respect (e.g. where citizens or non-governmental actors can perform online many activities that were once handled by government employees).

Out of these considerations within the overall network society perspective, the following definition of an 'e-government barrier' was adopted by the project:

> Characteristics—either real or perceived—of legal, social, technological or institutional contexts which work against developing networked governments because they: (a) impede demand, by acting as a disincentive or obstacle

> for users to engage with e-government services; or (b) impede supply, by acting as a disincentive or obstacle for public sector organizations to provide e-government services; or (c) constrain efforts to reconfigure access to information, people and public services in ways enabled by ICTs.

This definition helps counter the view of laws and regulations (e.g. privacy protection) as 'barriers', when they are best seen as 'requirements' for e-government services, in the same way that a pump is a requirement for a water distribution system. Legislation that is inappropriate in particular contexts can create legal barriers or blockages, but well designed and implemented legislation can facilitate the progression of e-government.

Previous Attempts to Identify e-Government Barriers

The literature on e-government has identified numerous forms of barriers. However, our review uncovered a relatively limited number of research outputs focusing primarily on barriers to e-government. These tended to have diverse objectives and employ different methods.

For example, OECD research[21] identified four external barriers to e-government (legislative and regulatory; budgetary; technological change; and digital divides) together with internal obstacles that may be tackled on a more local level (e.g. organizational change; leadership; central coordination; and monitoring and evaluation). In contrast, the eUser study[22] summarized supply and demand barriers to e-government in each EU member state (e.g. the eUSER study in the Netherlands identified a skeptical attitude among citizens towards online transactions as a demand side barrier and, on the supply side, the reluctance of government agencies to give up their autonomy to co-operate across departments). In addition, a pan-European face-to-face survey of 150 high-level administration officials[23] ranked barriers to e-government in the following order of importance: security and confidentiality; lack of access among citizens; high set-up costs; lack of co-operation among administration departments; and lack of political will and drive.

While these and other studies in this area have a number of common themes, their formulations of barriers vary in number, specificity and nature, without articulation in a consistent form that could be conveniently used as a framework for exploring the nature of the barriers in more depth.

Seven Categories of Barriers to Networked Governments

Overview of the Categories

A key outcome of our review process was the synthesis of these treatments to arrive at a list of seven categories of barriers that encompassed most of the issues identified by previous research. These include a number that would be central to organizational and institutional change: poor coordination; workplace and organizational inflexibility; leadership failure; lack of trust; and the financial inhibitors that can be a strong break on innovation, particularly when it creates much organizational uncertainty. A sixth broad factor, digital divides and choices, is crucial to government's engagement with wider network society developments. Finally, poor technical design is obviously a key issue in such technical-based developments, but

is not as dominant as has been perceived for the traditional substitution model of e-government.

The seven categories are intentionally broad and tied to a multitude of more specific barriers relevant at different governance, institutional and jurisdictional levels. The categories also anchor cross-cutting themes between the many diverse issues that embrace different categories, from the challenges of adapting organizational and administration dynamics to supporting new networked government models to meet political goals.

An important project activity was the carrying out of detailed case studies in five areas. As these aimed to illuminate cross-cutting themes, they included examples from a range of e-government activities at a number of different governance, institutional and jurisdictional levels. These covered: digital citizen rights; e-consultation; employment mobility; public registries; and cross-border e-procurement.

The study on employment mobility in Europe[24] highlighted the value of our barrier categorization to understanding factors affecting organizational dynamics in a network society. It examined the use of online job searches, including two national and one pan-European service. The most important barrier found was poor coordination, particularly because these services cross existing governmental jurisdictions and administrative and departmental boundaries. In addition, there is an important unmet need for better coordination between public sector employment services and those in the private sphere with which government is increasingly competing in cyberspace. Private initiatives have generally been more innovative in reaching out to wider audiences by offering a wider range of jobs in more interesting ways than is found on public sector websites. For instance, private Web 2.0 services[25] are creating popular innovations that move away from providing only direct user interactions with job vacancy databases towards new social networking modes (e.g. enabling jobseekers to have a personalized home page to allow employers to search for appropriate applicants, or job seekers to identify contacts who are able to help introduce them to an employer). This gap between private and public employment e-services is exacerbating digital divides by constraining choices for some groups to the more limited public services.

The complexity of developing a framework with clearly defined barrier categories is indicated by the way we considered 'lack of appropriate skills' as a category at one stage. Further analysis revealed important distinctions between the skill differences arising from digital divides in the general public and issues around inadequate training and capacity building among the specialists who develop and supply services. On the other hand, we felt 'financial inhibitors' is fundamental enough to be identified as one of the key categories, although it can arise within other categories (e.g. to fund the multiple channels needed to address the needs of minority groups or to improve trust by providing investment to create more secure systems).

The following subsections give an overview of each type of barrier category identified through the project's various activities.

Poor Coordination

Emerging forms of e-government service delivery and ways of working often cross traditional government jurisdictions, levels and administrative and departmental boundaries. As a result, the flow of information and services through new networked governance channels can be inhibited or blocked because of variations in legal, regulatory and administrative regimes or departmental and agency cultures and

processes on different sides of traditional boundaries. For example, effective coordination across the EU is particularly important because responsibility for directing public administration activity is frequently fragmented and shared across multiple levels, although the legal mandate at the EU level through the European Commission deals only with Member States. Coordination between different jurisdictions is also often necessary in a growing range of areas where the Internet connects people across national boundaries, such as in inter-governmental relationships or to protect citizens using networks with a wide online reach.

Workplace and Organizational Inflexibility

Resistance to innovation among public administration management and staff[26] can hamper the redesign of organizations and their processes required to implement an effective networked government system. This redesign is particularly important to support crucial e-government activities that cut across traditional administrative responsibilities. However, prevailing practices can be difficult to change as they are designed to support certain patterns of communication and information exchange, while discouraging others. Where e-government blurs these boundaries, the appropriate changes need to explore how the new methods of operating and managing public services can meet various forms of human and institutional resistance (e.g. fears of job losses or anxieties about work and organizational restructuring[27]). Inadequate staff and management skills, over-rigid employment laws and departmental 'turf wars' involving competition over who is responsible for what in a network of services are other main causes of inflexibility when working practices and organizational structures and processes need to be changed.

Leadership Failures

Wider e-government take-up can be limited by failures in political and management leadership,[28] such as a lack of clear vision, a firm political will for e-government or failure to provide appropriate planning and adequate resources to avoid or minimize the impacts of resistance to change. Management of the development of ICT systems in the public sector has a generally poor track-record,[29] so strong attention by senior management must be given to doing this well, especially in projects targeting high impacts across many stakeholders and boundaries. Management cycles of attention and inattention have led to patchy, stop–go progress on e-government. The ineffective management of differences in interests, perceptions and understanding among different stakeholders can also lead to unresolved conflicts that hamper e-government initiatives.

Lack of Trust

Low levels of trust in e-government can be a major impediment to their take-up. Although growing use of the Internet and e-commerce in the private sector is establishing more general trust in the use of ICT-enabled networks,[30] e-government raises particular trust concerns as so many public services require the handling of highly sensitive personal information in digital forms. This can create a 'trust tension'[31] between the need to collect data on individuals to provide services, such as health records and voter registration, and 'Big Brother' fears of data surveillance or the inappropriate secondary use of personal information in computer databases.

Trust in e-government is also affected by general perceptions of trust in government, for example in relation to the existence of a Freedom of Information (FOI) Act regulating access to information in the public sphere and the government's attitude to its implementation. Such trust concerns can be addressed through data protection, privacy and security mechanisms that are seen to be able to protect citizens from the unauthorized electronic disclosure of personal information.

Financial Inhibitors

Perceived and real costs of developing, implementing and maintaining e-government services can be crucial constraints on innovation. The financial tap to e-government can be tightened or turned off when costs loom large because of difficulties in measuring immediate and future benefits in contrast to the clearer, generally shorter-term and often apparently higher costs (e.g. in comparing the investment needed to build multiple online and offline channels for different citizen groups[32] to the less tangible longer-term gains from greater inclusivity across digital divides that can be obtained from a broader mix of channels). This is important because this kind of cost–benefit analysis usually forms the core of the 'business case' required to support an e-government proposal, often in competition for resources with other critical demands on public services. The frequent lack of adequate R&D funding is another significant financial issue for e-government.

Digital Divides and Choices

A government-centric rather than user-centric focus when developing and implementing e-government services can be a bar to the take-up of online services across the social and economic gaps in digital divides demarcated by wealth, age, gender, disability, language, size of business and other factors. For instance, failure to develop and implement e-government services that genuinely meet the varying range of perceptions, knowledge, capacities and needs among citizens' across these divides can mean e-government resources are used in very different ways (or not used at all) by different individuals, groups and organizations. These barriers can be overcome by ensuring there is wide access to technology and skills training and other capacity building support for those on the 'wrong' side of divides.[33] Differences within the same household (e.g. between the older and younger members[34]) indicate how the take-up of e-government can be influenced by digital choices made by individuals, in addition to the lack of affordable, reliable physical access to networks for some social groups and geographical areas.

Poor Technical Design

Inadequate technical design, such as poor interoperability and insufficient account taken of user needs in operational interfaces, can be major practical impediments to effective e-government systems. This can make online public services difficult to access and use, thereby sabotaging even potentially successful services and discouraging those experiencing the problems from trying other e-government opportunities.[35] Incompatibilities between different hardware, software or networking infrastructures can disrupt a network's openness in ways that seriously disrupt take-up and effective use of e-government capabilities, such as in differences between

earlier public administration 'legacy' back-office administration systems and more modern citizen-facing networked services.

Results of the Project's Online Survey[36]

Having identified key categories of barriers, the project undertook an online survey to complement previous research examining related areas[37] by investigating the relevance and strength of the project's categorization and the relative importance attributed to specific e-government barriers. The survey was carried out in May and June 2006 by the Oxford Internet Institute (OII). It consisted of a non-probabilistic web-based survey built around a questionnaire[38] that explored e-government stakeholders' perceptions of barriers to e-government progress, and how these vary across individuals' experiences and geographical location.

The questionnaire asked participants to rate the relative significance of 30 barriers in terms of their capacity to block e-government (using the classifications 'not a barrier'; 'minor barrier'; 'important barrier'; 'very important barrier'). Respondents were asked to list barriers not included in the survey in a free text box. They were also asked to present other personal information (e.g. ICT skills; e-government experience; date of birth; and country of residence). The questions were primarily closed response, with English, French, German and Spanish versions available.

Given the exploratory nature of the survey, it sought to gain a wide spectrum of opinion rather than a probability sample of a specific population, such as government officials. To achieve this, the survey was hosted on the project website and advertised widely via e-mail lists, e-government websites and e-newsletters identified through the project's work with a wide range of expert contacts. Further distribution may have taken place without the knowledge of the research team.

The number of responses for this type of survey is notoriously low. Thus, all participants who completed the survey were given the opportunity to enter a prize draw to win 500 EUR. The survey was completed by 996 individuals, which is a sizeable response given comparable European Public Sector surveys. Respondents were engaged in e-government activities in public administration, business and relevant specialist areas. Most took 10–15 minutes to complete the questionnaire.

Analysis of the Survey Data

Factor analysis was conducted to determine the main issues that summarized and grouped responses to the majority of the barrier questions. A varimax rotation was used to simplify the factor structure and increase the interpretability of the factors identified in the analysis. These were derived from the rotated factors with factor loadings greater than or equal to 0.5. Using this method, nine factors apply to the data that captured the participants' views on 30 barriers to e-government. Cronbach's Alpha, an estimate of scale reliability (internal consistency), was computed for each of the constructs. Each was found to have a reliability that exceeded the suggested value of 0.70[39] for acceptable reliability. The results of the factor analysis are summarized in Table 1.

The nine component factors in Table 1 are listed in the order of explained variance. Using the numbers in the table, these components can be described as follows:

1. *Legal.* Most variation across the respondents is captured by whether or not they viewed legal barriers as important. The laws and regulations that can facilitate

Table 1. Factor analysis of survey responses on e-government barriers

	Component								
Barrier	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
FOI policies	0.682								
DP v. Sharing	0.656								
Employment law	0.643								
Public–private partnerships	0.625								
Copyright on re-use	0.605								
Liability risks	0.572								
E-rights	0.551								
Admin tradition		0.783							
EU coordination		0.753							
Language		0.724							
Legal variation		0.709							
ID standards		0.642							
Low use			0.817						
Skills—citizens			0.806						
Skills—officials			0.524						
Political support				0.742					
Not broken				0.606					
Resist change				0.562					
Vertical coordination				0.558					
Cost of developing					0.796				
Multiple channels					0.782				
Meeting laws					0.517				
Clear cost–benefit					(0.443)*				
Privacy civil liberty						0.821			
Theft, fraud						0.789			
Interoperability							0.669		
ID authentication							0.626		
Usability								0.710	
Lack motivation								0.692	
Accessibility									0.657

* 'Demo cost–benefit' is below the factor loading of 0.5.

or block e-government progress were seen as leading to many potential barriers, for instance in relation to: liability in online interactions between government, businesses and citizens; Freedom of Information; data protection; and employment legislation.

2. *Administrative.* This is concerned particularly with the complex issues that can arise when developing e-government across the EU, such as the substantial legal, political, administrative, technical, institutional and cultural differences between Member States and the ways each interprets EU Directives.
3. *Take-up.* For citizens, access to affordable and adequate networking and equipment capabilities and suitable support for developing appropriate skills are key reasons for inhibiting the adoption of e-government. Those from lower socio-economic groups, who are also usually the most frequent users of government services, typically have most access problems, leading to lower take-up rates. A lack of skills among government personnel can also be an important reason for poor e-government take-up.

4. *Resistance.* Opposition to innovation at all levels of government personnel can slow down, limit or prevent the necessary redesign of organizations and their processes required to deliver effective e-government. Risk-averse departmental cultures, lack of learning from good practice and failures in political and management leadership were among the factors highlighted here.
5. *Cost.* Concerns were raised about the costs of developing, implementing and maintaining e-government initiatives, particularly for hardware, software, systems and related organizational, people and support costs. A lack of appropriate cost–benefit analyses is also relevant to this factor.
6. *Privacy.* Concerns about inadequate security and privacy safeguards in electronic networks were seen to undermine confidence in, and take-up of, e-government services. This can also be affected by general trends in perceptions of trust in government.
7. *Technical.* Barriers to e-government systems and services can be posed by incompatibilities between systems in a public administration, both within the same department or between different agencies or governments (e.g. between EU Member States in trans-European networks). Creating common standards for secure identification and authentication systems was a significant technical issue identified.
8. *Design.* Addressing the difficulties caused by inappropriate user interfaces to e-government systems and motivating uptake (e.g. by the use of incentives) was highlighted as an important issue for encouraging e-government take-up across a diverse range of users.
9. *Accessibility.* This factor refers to the obstacles to achieving socially inclusive e-government, such as making e-government services easily accessible to those with physical disabilities, the elderly, minorities with special language needs and other groups who might be excluded from developments aimed at mass user audiences.

Table 2 presents our findings on the perceived importance of each of the 30 barriers that the survey identified, categorized into the nine factors discussed above, including the percentage of respondents who rated the barrier as 'important' or 'very important'. This shows that resistance to change was key in the view of most respondents (e.g. 80% specifically cited resistance to change by government officials and 84% cited 'coordination across government levels' as key barriers). The only other issues approaching this level of consensus among our respondents included a technical barrier, the lack of interoperability between ICT systems, which itself could be viewed as coordination dimensions. Take-up was seen as another important aspect, but at a significantly lower level of agreement on its importance.

As expected on the basis of a networked government perspective, resistance to organizational change may loom larger than many other taken-for-granted barriers to e-government. The top five individual barriers for the whole survey were: coordination across central, regional and local levels of government (84%); resistance to change by government officials (80%); lack of interoperability between IT systems (79%); low levels of Internet use amongst certain groups (69%); and lack of political support for e-government (68%). Next in importance came administrative, privacy and design barriers. Legal, cost and accessibility barriers were the least important amongst the nine factors, in relative terms, but still judged significant by many respondents. In short, there are multiple interconnected barriers to networked governments.

Table 2. Relative importance of barriers identified in survey

Factor	Barrier	Percent[a]
Resistance	Coordination across government levels (central, regional)	84
	Resistance to change by government officials	80
	Lack of political support for e-government	68
	Wish to avoid changing services that already work well	54
Technical	Lack of interoperability between IT systems	79
	Lack of secure electronic identification and authentication	64
Take-up	Low levels of Internet use amongst certain groups	69
	ICT skills among citizens	62
	ICT skills among government officials	61
Administrative	Lack of standards for electronic identification across the EU	62 (68)
	Differences in administrative traditions and processes in EU	60 (65)
	Coordination between Member States and European Commission	56 (61)
	Differences in laws and regulations across the EU	55 (61)
	The multitude of languages within the EU	32 (36)[b]
Privacy	Public concerns over potential for online theft and fraud	62
	Public perception of risks to privacy and civil liberties	58
Design	Citizens lack strong motivations to use e-government services	64
	e-government applications are difficult to use	50
Legal	Absence of clear data protection guidelines for sharing of information	57
	Lack of a general right for citizens to communicate electronically with public authorities	52
	Inadequate policies on freedom of information	49
	Legal concerns with private-public partnerships	42
	Employment laws that constrain e-enabled restructuring of jobs	39
	Heightened risks of liability	38
	Copyright constraints on reuse of information	36
Cost	Cost of developing e-government services	53
	Cost for government of providing services through multiple channels	49
	Increased costs for governments of meeting e-government laws and regulations (e.g. freedom of information or data protection)[c]	46
Accessibility	Making e-government services easily accessible to the visually impaired and others with disabilities	42

Notes: [a] Percentage rating the factor 'very important' or 'important'.

[b] Given that Administrative barriers are more likely to be of relevance to respondents within the EU, the frequencies for all respondents and (EU only) are provided; 723 respondents were from the EU.

[c] A fourth barrier (difficulty in demonstrating the long-term cost benefits of e-government), had some relationship with this factor (see Table 1), with a 60% importance rating.

Limitations of the Survey

Interpretation of the results of the survey needs to take account of some limitations in its scope and methodology. As the survey is based on a non-probabilistic sampling method, it cannot be generalized to a specific population. The research team asked participants about only 30 barriers because this was considered the maximum number one respondent could be expected to answer in the time available. A larger number of barriers may have led to a more detailed understanding of the relevant factors. Finally, the survey was largely directed to a European audience and had questions that were specific to the EU. Despite these limitations, this

survey provides evidence in line with our theoretical expectations anchored in a network perspective.

Discussion and Conclusions

Relevance and Resilience of the Barrier Categories

Analysis of the online survey and cases studies, together with feedback from the project's broad network, indicate that the findings around the seven barrier categories identified offer a useful grouping for analyzing and addressing the main challenges to moving to networked government approaches. This could help to develop a more consistent approach to understanding and addressing the impacts of digital networks in the public sphere.

The categories have remained resilient since they emerged in the initial project phase. For example, our factor analysis results from the online survey relate well to these categories. The important legal dimension is reflected in the project's research on the eight legal areas that underpin the barrier categories. Some of the other factors map onto just one of the seven categories (e.g. cost relates to financial inhibitors; privacy to lack of trust; administrative to poor coordination; and accessibility to poor technical design). Three (design, technical and take-up) relate to two of the seven categories, for example with design forming part of both poor technical design and the digital divides and choices categories. 'Resistance' covers three categories: leadership failures, poor coordination, and workshop and organizational inflexibility.

The survey's analysis also helped us to expand the concept of what was originally formulated as a 'digital divides' barrier to encompass 'digital divides and choices'. This reflects the need to increase take-up across all sectors of society by encouraging people to choose e-government services when they are available to them.[40]

Using the Framework to Help Develop Solution Guidelines

The findings, as reported here, indicate there is no 'single-bullet' solution that can eliminate all the many obstacles to progress that can arise in providing effective e-government systems. They also highlight the centrality of organizational change to realizing the benefits of networked governments. This strongly indicates that instead of concentrating on the 'substitution' of electronic for paper-based services, governments need to focus on facilitating the transformation of organizations in ways enabled by ICTs like the Internet. This often entails moving away from traditional 'stove-pipe' hierarchical organizational structures towards more networked organizational forms. It is during this transition that the major barriers to organizational change become major barriers to e-government.

Our research also shows that such organizational change is inseparably entangled with technical and social change, such as in standards setting and take-up of the Internet. The barriers are therefore multiple, interrelated and frequently resistant to change. They cover many levels, from individual resistance to change to regional economic constraints. Behind every barrier lies a set of directions for moving ahead when their causes are analyzed. An analytical framework based on the seven barrier categories identified could therefore enhance our understanding of these dynamics and help to direct attention to ways of building constructively on networked government models.

There are two main challenges in this field. One is to develop and use emerging knowledge of the full range of barriers and their legal foundations. The other is to explore ways to enable the required government organizational transformations. Governments around the world have been slow in using the revolution in ICTs to transform the way the public sector works and interacts with citizens. At the same time, the public has been adopting new electronic services across a wide array of sectors, such as in e-commerce, and governments have been mandated to move into the digital age by politicians and public intellectuals.

One significant factor in dampening the pace of change has been the limited view that dominates discussion of e-government as a substitute for face-to-face and paper media. Instead, the move to e-government should be viewed as a commitment to change organizations in ways that enable governments to exploit the potential of ICTs to reconfigure access to information, people, and services, thereby changing how citizens get information, communicate with government and obtain services. This will require the transformation of organizational forms, from well-defined bureaucratic hierarchies to networked organizations. As Manuel Castells has warned us,[41] automating bureaucracies will simply reinforce bureaucratic governance. Thus, the key to breaking barriers to networked governments is the support of organizational change, which is separate but critical to technical change.

For example, coordination problems within and between government agencies can be overcome by exploiting advances in search engines and the creation of web-portals to allow easy, efficient and reliable link up and search across tiers of government. This can help to make even uncoordinated government look coherent from a citizen's perspective. Good coordination between regional and local government institutions, and among institutions at the same level, can be achieved by government departments agreeing to implement common procedures and standards to provide shared networked services. Resistance to change and appropriate workplace and organizational flexibility can be overcome by providing effective capacity building and incentives to promote personal, group and process support for organizational models suited to making the most of networked government.

Establishing networked government champions at all levels can help to ensure that e-government progress is no longer held back by the pursuit of a too narrow media substitution vision. This shift of vision could also stimulate more citizens and businesses to make choices to take-up e-government, provided government ensures there is wide access to necessary technology, skills training and other capacity building support across digital divides.[42] Generating interest in networked government by demonstrating that e-government has a tangible 'payback' for citizens would help to build trust among the public as it would demonstrate that e-government offers something meaningful to their lives and is not seen by government as primarily an exercise in improving administration efficiency.

Notes and References

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2. See, for example, the report by the Canadian Government last updated in 2004, *Government Online: Serving Canadians in a Digital World*, available at: http://www.ged-gol.gc.ca/pub/serv-can/serv-can07_e.asp; the New Zealand 2006 updated e-government strategy, *Enabling Transformation: A Strategy for e-Government*, available at: http://www.e.govt.nz/about-egovt/strategy; and the United States 2003 e-government strategy, available at: http://www.whitehouse.gov/omb/egov/2003egov_strat.pdf.
3. See, for example, European Commission, *The Role of eGovernment for Europe's Future*, COM(2003) 567, European Commission, Brussels, 2003, available at: http://europa.eu.int/information_society/eeurope/2005/doc/all_about/egov_communication_en.pdf.
4. See, for example, European Commission, *Communication on eEurope 2005: An Information Society for All*, European Commission, Brussels, 2002, available at: http://europa.eu.int/information_society/eeurope/2005/all_about/action_plan/index_en.htm.
5. See, for example, Cap Gemini and TNO, *Does e-Government Pay Off?: Final Report of the European Commission's EUREXEMP Research Project*, November 2004, available at: http://europa.eu.int/idabc/servlets/Doc?id=19133.[0]
6. Cap Gemini, *Online Availability of Public Services: How is Europe Progressing? Web based Survey on Electronic Public Services—Report of the Sixth Measurement*, 2006, available at: http://ec.europa.eu/idabc/servlets/Doc?id=25150.
7. Accenture, *e-Government Leadership: High Performance, Maximum Value*, Accenture, Cambridge MA, available at: http://www.accenture.com/NR/rdonlyres/D7206199-C3D4-4CB4-A7D8-846C94287890/0/gove_egov_value.pdf.
8. See, for example, H. Margetts, 'e-Government in Britain—a decade on', *Parliamentary Affairs*, 59, 2, 2006, pp. 250–65; and the UK Audit Office's Government on the Web project website, available at: http://www.governmentontheweb.org.
9. See, for example, OECD, *The e-Government Imperative*, OECD, Paris, 2003, available at: http://webdomino1.oecd.org/COMNET/PUM/egovproweb.nsf/viewHtml/index/$FILE/publications.htm; Australian Government Information Management Office, e*Government Benefits Study*, Australian Government Information Management Office, Canberra, 2003, available at: http://www.agimo.gov.au/publications/2003/03/e-govt_benefits_study; OECD, *op. cit.*
10. See, for example, M. Castells, *The Rise of the Network Society*, Blackwell, Oxford, 1996; M. Castells, *The Internet Galaxy: Reflections on the Internet, Business and Society*, Oxford University Press, Oxford, 2001.
11. See, for example, W. H. Dutton, *Society on the Line*, Oxford University Press, Oxford, 1999; W. H. Dutton, 'The Internet and Social Transformation', in W. H. Dutton, B. Kahin, R. O'Callaghan and A. W. Wyckoff (eds), *Transforming Enterprise*, MIT Press, Cambridge, MA, 2005, pp. 375–98.
12. See, for example, J. Goddard and R. Richardson, 'Why geography will still matter: what jobs go where?', in W. H. Dutton (ed.), *Information and Communication Technologies—Visions and Realities*, Oxford University Press, Oxford, 1996, pp. 197–214.
13. Detailed information on this project is available at its website: http://www.egovbarriers.org. Research results are also published in R. Eynon (ed.), *Breaking Barriers to eGovernment: Overcoming Obstacles to Improving European Public Services, Deliverable 1b*, European Commission, Brussels, 2006, available at: http://www.egovbarriers.org/?view=project_outputs.
14. See, for example, M. Castells, *The Conflicts of eGovernance*, Conference presentation at the *Fostering Innovation in eGovernment Workshop*, 9 March 2007, Barcelona, Spain, available at: http://www.egovbarriers.org/downloads/Mar09Workshop/5th_workshop_report_final.pdf.

15. See, for example, W. H. Dutton and M. Peltu, *Reconfiguring Government–Public Engagements: Enhancing the Communicative Power of Citizens. Forum Discussion Paper No 9,* Oxford Internet Institute, Oxford, 2007, available at: http://www.oii.ox.ac.uk/research/publications.cfm.
16. Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector, *Official Journal of the European Communities*, L 201, 31 July 2002, pp. 37–47, available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_201/l_20120020731en00370047.pdf.
17. Directive 1999/93/EC of 13 December 1999 on a Community framework for electronic signatures, *Official Journal of the European Communities*, L 13, 19 January 2000, pp. 12–20, available at: http://europa.eu.int/information_society/eeurope/i2010/docs/single_info_space/com_electronic_signatures_report_en.pdf.
18. Eynon, *op. cit.*
19. Full details of the survey are provided in the report *Online Survey of Barriers to eGovernment*, available at: http://www.egovbarriers.org/?view=project_outputs.
20. See the *Breaking Barriers to eGovernment Case Study Report*, available at: http://www.egovbarriers.org/?view=project_outputs.
21. OECD, *op. cit.*
22. See these e-government country reports at the eUSER project's website, available at: http://www.euser-eu.org/SearchSpecial.asp?IDFocus0=3&CountryID=*&MenuID=109.
23. F. Heinderyckx, 'Assessing e-government implementation processes: a pan-European survey of administrations officials', in R. Traunmüller and K. Lenk (eds), *Electronic Government: First International Conference, EGOV 2002, Aix-en-Provence, France, 2–6 September 2002. Proceedings*, Springer, Berlin, 2002, available at: http://www.springerlink.com/content/njlkebtkl4kp/.
24. See the *Breaking Barriers to eGovernment Case Study Report*, *op. cit.*
25. See, for example, Doostang (http://www.doostang.com); Jobster.com (http://www.jobster.com); LinkedIn (http://www.linkedin.com); and Zubka (http://www.zubka.com).
26. See, for example, H. Margetts and P. Dunleavy, *Cultural Barriers to eGovernment*, academic article accompanying the National Audit Office report *Better Public Services through eGovernment*, TSO, London, 2002; R. A. Jones, N. L. Jimmieson and A. Griffiths, 'The impact of organizational culture and reshaping capabilities on change implementation success: the mediating role of readiness for change', *Journal of Management Studies*, 42, 2, 2005, pp. 361–86.
27. See, for example, EIPA, *Organisational Changes, Skills and the Role of Leadership*, European Institute of Public Administration, Maastricht, Netherlands, 2005, available at: http://ec.europa.eu/idabc/en/document/4527/254.
28. E. Lau, *Challenges for e-Government Development. Report on 5th Global Forum on Reinventing Government*, Mexico City, 5 November, OECD, Paris, 2003, available at: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan012241.pdf; United Nations, *World Public Sector Report: e-Government at the Crossroads*, United Nations, New York, 2003, available at: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan012733.pdf.
29. See, for example, Dutton, 1999, *op. cit.*; J. Organ, 'The coordination of e-government in historical context', *Public Policy and Administration*, 18, 2, 2003, pp. 21–36; P. Dunleavy, H. Margetts, S. Bastow and J. Tinkler, *Digital Era Governance: IT Corporations, the State and e-Government*, Oxford University Press, Oxford, 2006.
30. See, for example, W. H. Dutton and A. Shepherd, *Trust in the Internet: The Social Dynamics of an Experience Echnology. Research Report No. 3,* Oxford Internet Institute, Oxford, 2003, available at: http://www.oii.ox.ac.uk/research/publications.cfm.
31. G. A. Guerra, D. J. Zizzo, W. H. Dutton and M. Peltu, *Economics of Trust: Trust and the Information Economy*, DSTI/ICCP/IE/REG (2002)2, OECD, Paris, 2003.
32. See, for example, the study by the European Commission, *Multi-channel Delivery of eGovernment Services*, European Commission, Enterprise Directorate-General, Brussels, 2004, available at: http://ec.europa.eu/idabc/servlets/Doc?id=16867.
33. A. Dugdale, A. Daly, F. Papandrea and M. Maley, 'Accessing e-government: challenges for citizens and organizations', *International Review of Administrative Sciences*, 71, 1, 2005, pp. 109–18;

P. Norris, *Digital Divide? Civic Engagement, Information Poverty and the Internet Worldwide*, Cambridge University Press, Cambridge, 2001.

34. See, for example, W. H. Dutton, C. di Gennaro and A. M. Hargrave, *The Internet in Britain: The Oxford Internet Survey (OxIS)*, Oxford Internet Institute, Oxford, 2005, available at: www.oii.ox.ac.uk/research/project.cfm?id=8.
35. D. M. West, 'Equity and accessibility in e-Government: a policy perspective', *Journal of e-Government*, 1, 2, 2004, pp. 31–43. Also see, for example, European Information Directorate General, *Your Voice on eGovernment 2010, Online Public Consultation October–December 2005*, V1.0, European Commission, Information Directorate General, Brussels, January 2006, available at: http://europa.eu.int/idabc/servlets/Doc?id=24086.
36. See the report *Online Survey of Barriers to eGovernment*, *op. cit.*
37. See, for example, P. Balestrini, D. Gilbert and D. Littleboy, 'Barriers and benefits in the adoption of e-government', *International Journal of Public Sector Management*, 17, 4, 2004, pp. 286–301; W. Lam, 'Barriers to e-government integration', *Journal of Enterprise Information Management*, 18, 5, 2005, pp. 511–30; D. F. Norris and M. J. Moon, 'Advancing e-government at the grassroots: tortoise or hare?', *Public Administration Review*, 65, 1, 2005, pp. 64–75.
38. To examine a copy of the questionnaire, see Appendix 2 of the *Online Survey of Barriers to eGovernment, op. cit.*
39. J. Nunnally, *Psychometric Theory*, McGraw-Hill, New York, 1978.
40. See, for example, W. H. Dutton, *Social Transformation in the Information Society*, UNESCO Publications for the WSIS, Paris, 2004.
41. Castells, 2007, *op. cit.*
42. Dugdale *et al.*, *op. cit.*; Norris, *op. cit.*