Can e-Government Systems Bridge the Digital Divide?

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Abstract: Electronic Government systems are often seen as panacea in the remedy of all failings of governance. With a history span of almost two decades, e-government implementations have often reached dead ends and have regularly failed to deliver the promise that the governments that have initiated them have made to their citizens. Despite an abundance of development models and best case scenarios identified in literature, e-government services are continually failing to attract the citizens and to capture their trust and faith. The main reason quoted for such failures is the lack of innovation and inclusivity in the way a service is designed and delivered. The digital divide is the major risk of marginalizing sectors of society or even whole continents due to lack of access to web based services. In the developing world it is mainly the lack of, or poor infrastructure that maintains and often widens the divide, while in the developed world it is lack of skills and difficulty of accessing services that leads citizens to abandon their efforts in using services online. Whatever the reason that leads to non-access of services the effect is similar and those citizens that fall victim to it are increasingly consumed into the trap of the digital divide. Efforts and initiatives to address the divide have primarily focused on building the infrastructure and providing access to the web. However, the quality and accessibility of online services is quite often then reason why citizens distance themselves from web-based services and the internet in total. This paper attempts to explore the shortfall in criteria for evaluating a government's efforts in planning, implementing and delivering services that address the operational requirements of efficient government, but equally cater for the needs of the citizens as end users of the service.

Keywords: e-Government, Digital Divide, e-Government Development, e-Government Attractiveness, e-Government Evaluation

Introduction

The majority of countries on a worldwide scale have implemented or at least have a strategic plan in place for implementing e-government applications aiming to improve the performance of governance delivery and improving the way citizens interact and complete transactions with government organizations and departments.

Although the above general aim of e-government systems appears inclusive of the majority of cases, the specific aims of the different e-Government systems vary considerably. The more advanced countries in terms of e-government systems deployment are found amongst the group of developed countries and they usually are the basis upon which other countries form their strategies and implementations (Savvas et al 2009, Shareef et al 2010).

Such imitations of "successful" results often lead to problems as the countries and organizations that adopt them lack in compatibility of the application domain, the infrastructure to capitalise on the potential benefits and in most cases cannot even guarantee the accessibility of the service to its intended recepients. This creates a different notion of the digital divide, not one relating to the lack of technology and internet access, but one that relates to lack of available services that target the needs of their customers. In contrast, when citizens and businesses find available and desirable online services they'll seek all possible routes to access them to reap the benefits and in this way the obstacles leading to the digital divide can be overcome (Pimenidis et al 2009).

What constitutes appropriate and successful e-government services and what are the criteria upon which we can evaluate a country's potential in delivering suitable services to its citizens are issues that have been widely explored by researchers but with the focus being primarily on technological issues. Literature is rich in papers attempting to discuss this issue, with the majority focusing on concepts such the e-readiness rankings (recently renamed digital economy rankings) and their relevant criteria as provided by the Economist Intelligence Unit (2011) and the e-government

development rankings as provided by the e-government survey conducted by the United Nations Department of Economic and Social Affairs (UN 2010).

1. e-Government capacity measurement

Since the dawn of online services many people believed that the power of information and communications technology (ICT) could drive social change in predictable and desirable ways. The past two decades have supplied many successful examples of e-government services, but there is at least an equal number of those that demonstrate the triumph of hope over experience in the ability of e-government to drive change. The use of government portals, the shop window of many e-government programs, has on average attracted no more than 30% of the population, making them appear as either inefficient or in the worst case exposing the rest of the citizens to the risk of the digital divide(Millard 2010). e-Government is promoted as a means of transforming government, empowering the citizens and ushering in a new era of deliberative democracy. In doing so though governments and related agencies do not shift the focus away from technology and towards the social and process reengineering exercises required to empower such services. Instead ICT remain at the core of a country's "world view" of digital services and the ability to improve efficiency, effectiveness and social inclusion and equality.

Since 2000, the Economist Intelligence Unit (EIU) has been assessing the world's largest economies on their ability to absorb information and communications technology (ICT) and to use it for economic and social benefit. This benchmarking exercise was originally termed the "e-readiness rankings" and has evolved as the definitive guide to a country's potential of delivering technology empowered services. Since 2010 the study has been renamed as the "digital economy rankings", to reflect the increasing influence of ICT in economic (and social) progress. Despite the social element taken into consideration for the first time, the emphasis has not shifted from its technology dominated core. Infrastructure metrics, points of access, telephone landline density are predominant amongst the assessment criteria to rank a country as to its ability to develop and deliver online services. The digital economy rankings assess the quality of a country's ICT infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. It is perceived that when a country uses ICT to conduct more of its activities, the economy can become more transparent and efficient. The EUI ranking allows governments to gauge the success of their technology initiatives against those of other countries, while companies that wish to invest or trade internationally can use them as an overview of the world's most promising business locations from an ICT perspective (EIU 2011).

The e-government survey conducted by the UN addresses more issues relating to social aspects and targets transparency in government and the involvement of the public in decision making. The survey attempts to benchmark technology used and the relevant investment against the effectiveness of the solutions (UN 2010).

None of the above reports seeks the reasons for failure or slow progress in a country's capacity to reflect the public's / user's requirements into its plans and implementations of government led online service. Instead a blanket assumption that all shareholders would benefit from the implementation of e-government services has been adopted, without investigating whether these reflect actual user needs as these are perceived by the public.

1.1 e-Government expectations

The World Bank's website provides an extensive definition of e-Government as… "e-Government *refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions"*… (World Bank Group, 2009).

In using such a highly strategic but rather generic definition as the basis for assessing e-government effectiveness researchers tend to miss out on the issues that are central to the requirements of the public. Unless these issues are addressed, the public / users won't be attracted to online government services regardless of the technology available to them. What most governments aim for can be summarised (but not limited to) in the following. From this list only the first point is directly relevant to the public in terms of addressing direct requirements, while the others are long term targets of government which may benefit the public in general on a long term basis.

- Higher quality of services
- Improved efficiency of exercising governance

- Reduced waste in public administration
- Wider inclusiveness
- Reduced corruption
- Higher government accountability

The public needs / seeks services that address their problems in a direct and immediate way and provide solutions that are cost effective for them. The issues of technology and access to connectivity can be overcome if the right incentives are there and if the citizens can see tangible benefits from using them. The research literature is full of examples where even in remote and poorly serviced areas in the world users utilise any technology available to reap the benefits of solutions that would provide convenience and cost savings in communicating and transacting with governments (Bolissian et al 2006, Buys et al 2008, Pimenidis et al 2009,).

2. Citizen focused services

For governments to evaluate their own strategies for developing and deploying online services for the use of their citizens, they need to be able to answer the following questions.

- Does it Work?
- From whose point of view is the service right?
- How attractive are services to citizens?
- Are citizens “Forced” into using e-government services?
- How do we assess the success of e-government services?
- What about those that are not computer literate or cannot access the services for other reasons (such as disability)?

James, as early as 2005, claimed that e-government initiatives can only succeed if government information services are easy to understand and to locate by citizens with basic access to ICT and minimal computer literacy. Similarly, interacting with government must be quick and straightforward while to address the needs of people that might be otherwise restricted to accessing online services, a range of delivery modes should be offered. In such a situation people will be able to choose from a range of service delivery modes, but will prefer the added convenience and functionality of online, electronic and voice-based channels, as the quality and accessibility of those services improves.

Governments must focus on continuing to ensure that people with a disability can access government information and services with ease.

The Australian government included the following guidelines as part of their strategic plan towards inclusive and effective e-government services.

Authentication and personal or business information will need to be provided only once through a simplified government sign-on, to access government information and services and for ongoing interactions, transactions and updates. This will be a single sign-on, except where circumstances require otherwise. It will be possible to group diverse transactions and complete them at the same time, without navigating the underlying structure and complexity of government. People will be able to interact with many areas of government without needing to understand exactly which agencies deliver which services. Privacy and security rights will be paramount in all service delivery channels offered by government, and will underpin the implementation of this strategy. People will manage the integrity of and access to their own personal details. Anyone unable to do this will be able to nominate agents to manage personal details on their behalf (Department of Finance and Administration, 2006).

In adopting similar strategies governments across the world and in particular in developing countries will need to increasingly manage their programs and interactions with stakeholders electronically, providing organisations and businesses with the same benefits and options of interacting electronically.

Governments need to present a consistent and unified face regardless of whether approaches are made in person, over the telephone, using the Internet or any other form of technology. This consistency will address the common frustration associated with trying to understand government structures to find the right agency. Government must also match private sector best practice for electronic interactions. This consistency will extend to non-government entities delivering government services. For example, the burden for business will be reduced by increasingly embedding government processes in the natural systems being used by the business community (Shareef et al 2010).

2.1 Citizen’s Requirements for e-Government Services

Simply converting paper bureaucracy into digital bureaucracy will not satisfy many people; in time it'll dissuade even the most avid users of online services and would result in widening or even worse creating a wider gap in the context of the digital divide (Pimenidis et al 2009).
e-Government should focus on the use of ICT to assist in the transformation of government structures and operations for cooperative and integrated service delivery. If the technology does not result in better outcomes for citizens and agencies it will mean nothing more than an added cost to government expenses. Imitations of "successful" results often lead to problems as the countries and organizations that adopt them lack in compatibility in the application domain, the infrastructure to capitalise on the potential benefits and in most cases cannot even guarantee the accessibility of the service to the its intended audience.
To add further to the above, governments should use the quality of services provided as a means of reinstating trust to government and enhancing transparency of operations. The Freedom on the Net 2011 report identifies that the more technological advances that appear in the use of Internet related technologies, the higher the rate of violations of citizens rights identified in terms of freedom in the use of the Internet. Such violations are not just limited to countries where democracy has been oppressed over a considerable time, but also in democratic countries such as the USA, the United Kingdom and Australia (Kelly and Cook 2011). Although such violations are infrequent in the above mentioned countries when compared to those related to countries such as China, Cuba and Iran, they still undermine the potential and objectives of e-government services inducing or increasing mistrust to government. At the same time, the negative relation between technology and transparency in communication, as portrayed in the above report, invalidates or at least reduces the gravity of technology as the prominent and decisive factor in assessing a country's readiness to deliver useful and reliable online services.
Advanced countries in terms of use of the Internet and related ICT in conducting business and government transactions such as the UK, have long accepted the need to different strategies when addressing the needs of e-government strategy. The UK approach to Transformational Government is about creating conditions in which government transforms itself. Its implementation plan, since 2006, draws upon best practice in the public and private sector to create that transformational environment, bringing technology and business functions together through a Service Transformation Board. The key objective of Transformational Government has been to identify barriers to change that could not be removed by individual departments but that required collective action. The implementation plan explains what the Service Transformation Board and other stakeholders should do to address these issues (HM Government 2005).
The UK and Australia are only two examples amongst the technologically advanced ones where the right strategy and successful implementation exist harmoniously. However, the majority of countries are still seeking a successful blend in achieving the above and in doing so, they often risk driving a section of their citizens on the verge of the digital divide.

3. The Digital Divide and its relevance.

The digital divide has been termed as the lack of / or limited access to the internet and electronic services. As access improves with improvements to infrastructure, reductions in connectivity costs and increase in bandwidth available, a new notion of the digital divide emerges through the lack of availability of suitable, easy to use and useful e-services for the wider public. The advent of new technologies embraced by the tech-savvy generations lead to marginalization of those who do not have access or do not have the means or the incentives to embrace them. Mobile systems appear to make the breakthrough in terms of accessibility, but the infrastructure has to be provided, services to be developed in the context of meeting the users' / citizens' objectives (Pimenidis et al 2009, Buys et al 2008).
Internet usage numbers are most often cited to describe this divide. In the year 2000 the Millennium Declaration called upon its adherents to 'make available the benefits of new technologies, specifically information and communications'. Three indicators were chosen to measure ICT availability in countries and the indicator pertaining to the Internet is defined as the number of users per 100 inhabitants. James (2005) argued that the Internet use indicator applies poorly to the latter sector, because there it represents the illegitimate transposition of a developed-country concept to an entirely different and inappropriate institutional setting.

3.1 The Digital Divide and e-Government services

The digital divide is discussed in academic, professional and popular writing and comments under a variety of categorizations. These include north-south, developed-developing world, urban-rural, rich-poor and so on. The contemporary divide can take some unusual forms. For example there has

recently been discussion of a divide between those who use the Internet and those who can use it, but choose not to do so because of the marginal opportunity cost of leisure time (Goldfarb and Prince 2008). Another form of divide is between those who are highly sensitive about and those who are indifferent to personal privacy. The latter two divisions are manifestations of more fundamental factors than a shortage of time, a deficiency in technological skills or a lack of adequate access to the Internet.

When a citizen has to deal with the state, such transactions have two distinct and important characteristics. First such transactions are often mandatory and second the state is the monopoly provider of the service she needs or is obliged to use. In principle, in such circumstances, key public sector values, including equity and fairness, decree that the government cannot force a citizen to use an on-line service without access to technology, the ability to use it and, perhaps as noted above, support in using it. It may be possible for businesses to offer products and services solely on-line (and this is increasingly common), but to offer a mandatory government service purely in on-line form is to discriminate against certain classes of citizens. In practice therefore even where there is top class on-line service available, as long as there continues to be a digital divide, governments will continue to be obliged to maintain at least one and possibly several alternative channels for service delivery. Beneficially though this might be in terms of bridging the digital divide, the maintenance of services across multiple channels might have considerable impact on cost, coordination and consistency (Ebbers et al, 2008; Janssen et al, 2003).

To aid discussion, a five way classification of digital divisions will be used. These five forms of divide can be mapped onto the EU e-inclusion categories (EU, 2006b). Each form presents a different set of socio-technical problems and requires a different set of solutions – assuming that a solution is required at all. The five categorizations together with the corresponding EU e-inclusion categories in parentheses are as follows:

- Structural (e-accessibility, geographic, inclusive e-government);
- Demographic (ageing, socio-cultural, inclusive e-government);
- Educational (competences, socio-cultural);
- Economic (social-cultural, inclusive e-government);
- Physiological (e-accessibility, socio-cultural, inclusive e-government).

These categories are by no means mutually exclusive. A group or individual will most probably fall into several of them simultaneously.

Given the above categories one can extract valid and justifiable criteria for assessing the suitability of a country's potential to deliver useful online services that provide added value to their users and promote inclusivity. E-readiness and e-government capability can no longer be assessed solely on the basis of a set of criteria that closely relate to the use of and availability of ICT, but should expand to factors that relate to and address critical issues of the digital divide (Savvas et al 2009).

4. A strategy for enhanced services and inclusivity.

Currently, e-government systems aim at improving operational efficiency in governance primarily targeting cost-cutting and faster processing of taxes and other income generating activities, ignoring or not focusing in the best of cases on the citizens' needs. One cannot help but asking the question whether governments have the capacity, the interest and the incentive to improve e-government systems? Only if they really mean to achieve real e-democracy, to fight corruption, to improve the level of services, to minimise citizen life disruption in receiving such services and achieve equality across society will they strive to develop such systems and services to the citizen's advantage.

Web-services and the semantic web offer an opportunity for governments to capitalise on existing services and offer citizens the choice of a variety of safe and trusted vehicles through which they can interact with government services. The wider the choice and the wider spread the mediums of delivery of such services they become, the greater the level of inclusivity will be achieved. Infrastructure problems cost of access and familiarity with emerging technologies can be overcome if the service is attractive and if it is delivered over a range of access media (Kolsaker and Lee-Kelley 2009, Pimenidis et al 2009).

4.1 The case Australia

Conforming to the above and aiming to promote inclusivity and equal treatment of all members of the public that interact with the government, presenting a consistent and unified face regardless of whether approaches are made in person, over the telephone, using the Internet or any other form of technology, the Australian government used the model portrayed in figure 1 below.

Here the last aspect of the model is value for money shown as the bottom layer of the diagram. The location of this layer does not signify order of importance (i.e. least important) but illustrates the pathway through which it is achieved. Therefore if one were to assess the capability of such a system to deliver

value for money both to the user (member of the public) and the government as owner of the system, one would have to consider aspects of connectivity and capabilities of the public sector. The reader should note that the concept of technology used is not relevant as there are multiple channels of access, but what matters most is the process integrating the four levels of service delivery shown in the middle of the government.

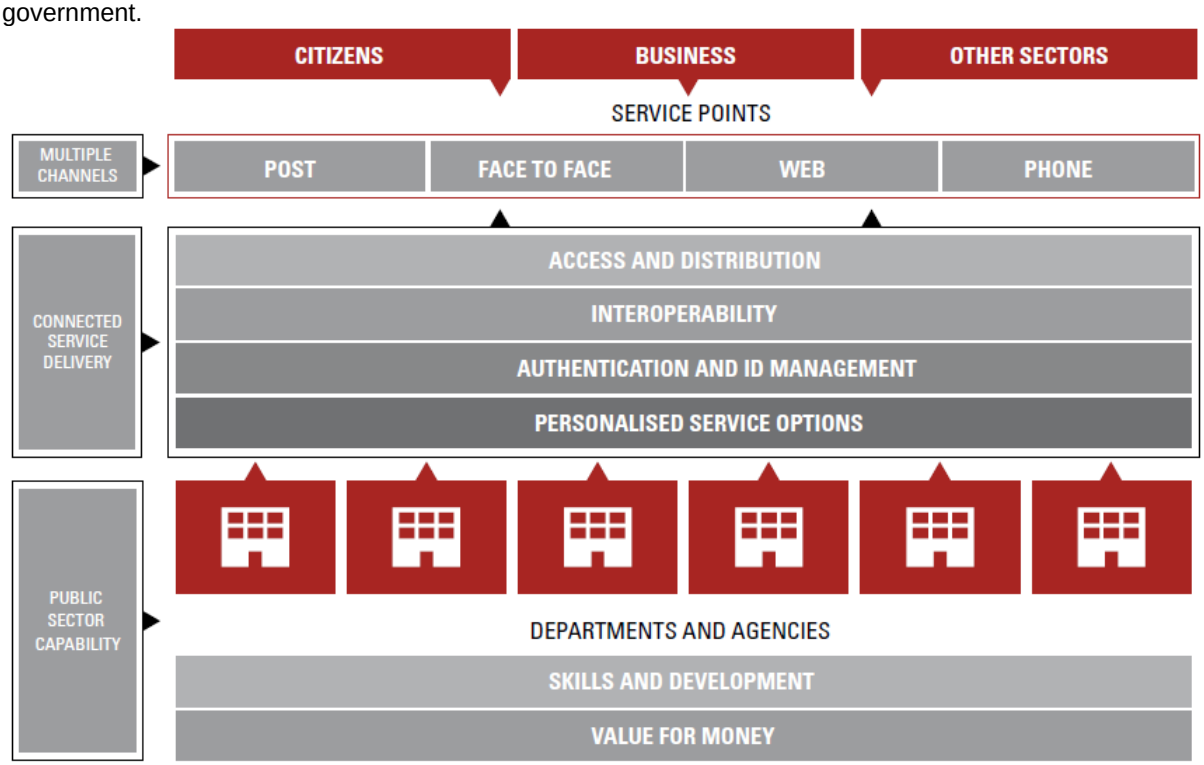

Figure 1 Connected Government - Client's View – (source Department of Finance and Administration 2006).

The government uses the opportunities presented by connected government and technology to improve its business processes. It will reform poorly designed and redundant processes and reduce duplication by standardising similar processes across agencies and, where possible, combine those processes. Agencies will operate in a collaborative, connected manner, rather than in isolation from each other.
The considerable benefits from a more connected approach include more agile service delivery and the ability to quickly redeploy services to different sites, including temporary locations (Department of Finance and Administration 2006).
A government's ability to respond to emergencies will also be enhanced. All the parties that need to respond to an emergency situation will be linked and operating under a common framework. Connected government using new technology also offers new ways to think about policy and delivery. In this way a government can provide a seamless service to people progressing through different stages of initiatives that cross several agencies. As connected government expands and a whole of government approach to systems is adopted, more opportunities like these will arise. In doing so the government achieves efficiency in its own processes and appears more attractive and potentially more trustworthy to the citizen.
In following the above approach the government is able to review and consolidate its websites, so that it is easier for people to find what they want. A simpler, more streamlined government online presence will be easier to promote, enhancing awareness and use. User accounts will address the growing diversity of people interacting with government. Each user will be able to construct a personalised view of government highlighting the services and information most relevant to their needs.
Providing multiple points of access the government addresses the risk of inducing more acute forms of digital divide of the types discussed in section three above. Citizens feel the benefits of equal treatment, do not feel marginalized and will gradually be attracted by the simplicity of the process in using technology that already is available in everyday devices that are in their possession, i.e. mobile phones, television sets, etc. The emphasis shifts away from technology and moves towards processes which reflect educational and cultural diversity, as well as the need to support people with disabilities.
Systems that address all of the above requirements will most probably be able to address the digital divide whether this of international or transnational extent. The objectives upon which such efforts are centred

should also form the basic (along with access to ICT) criteria in assessing a country's ability to offer effective services to its public (Janssen et al, 2003).

5. Conclusion

The sole reliance of a country's effort on improving access to ICT in improving the way the public interacts with the government is a rather flawed approach. The wider the choice and the wider spread of the mediums of delivery of e-services, the greater the level of inclusivity will be achieved and wider inclusivity will yield better interaction and satisfaction.
Problems with infrastructure, cost of access and familiarity with emerging technologies can be overcome if the service is attractive and if it is delivered over a range of access media.
The Digital Divide can be overcome if the now mature technologies are put to the right effect to contribute to process reengineering, transforming government to a more effective and public friendly entity, delivering value for money to its citizens.
A key question that remains unanswered and could provide the scene for further research is the availability of an evaluation framework for assessing a government's strategy and its resulting implementation in terms of their ability to address both governmental and end user requirements.

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