Strategies to Increase E-Government Take-Up:
Looking Beneath Statistics

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Abstract- E-government is about making the full range of government activities available electronically. Essentials for e-government are investments in Web-based electronic government systems and telecommunication infrastructure, with an educated population providing some obvious advantages. Surprisingly, however, some governments with less developed ICT infrastructure seem to have a higher level of government online transactions than others with more developed infrastructure. This paper examines the supply and demand side barriers to e-government from a multidisciplinary perspective to identify the possible strategies to overcome those barriers. It concludes that, besides investing in ICT, it is equally important to increase the ‘Technology Readiness’ of people and ease of access to ICT, in and out of government if e-government uptake is to be effectively increased.

Keywords- E-government, Demand and Supply, Technology-Readiness

I INTRODUCTION

E-Government, through the adoption of ‘Information and Communication Technology’ (ICT) in government, is being hailed as the ‘new’ government of the 21st century. Policymakers at all levels of government embrace its promises of efficiency, better services, and more responsive government (Cai Li-hui, 2003). However, despite this enthusiasm, there is little agreement about what e-government is? For the purpose of this paper, e-government is about making the full range of government activities – internal processes, the development of policy and services to citizens – available electronically. Electronic interactions have astonishing potential for transforming the internal activities of all kinds of organizations and dramatically altering the relationships between organizations and those who use them – in particular, firms and their customers. Information and Communication Technology is not a supporting technology, but coincides with the primary process and touches government at its core. Yet in many countries the potential of web-based technologies are taking much longer to be realized in government and in spite of massive investments in ICT, different countries score differently with regards to e-government. Why? What are the obstacles to the development of e-government - do they come from within government organizations themselves, or from society? Are they ingrained in organizational structures and societal interactions - or can they be overcome and if so, how? This paper first briefly gives a picture of the realities of e-government in a few selected countries. It then goes on to review and categorize the supply and demand side barriers to e-government, drawing on experiences from different countries and the private sector; institutional theory; cultural theory; social psychological research into societal use of information and communication technologies; and organizational research into the relationship between such technologies and organizational change. Finally, it considers how these barriers can be overcome for governments to develop effective e-government.

II AN OVERVIEW OF E-GOVERNMENT REALITIES
IN SELECTED COUNTRIES

The tables below refer to some of the numerous ‘e-government’ reports and rankings produced by global consultancy firms eager for government-related work and extract some pertinent statistics. These statistics, however, have to be treated cautiously, due to the great variation in methodology and purpose of such reports.

Table 1 below clearly shows that the rankings achieved by different countries as regards e-government readiness is a clear function of their respective investments in developing Web-based Government, investment in Telecommunications Infrastructure and the quality of their human resources. The low rankings of China and India are understandable by virtue of their being developing countries with much to catch up in terms of Web development, investment in Telecommunications and in their human resources. The relatively backward position of Japan vis-à-vis other developed countries, however, clearly explains the hypothesis that these 3 ingredients (i.e. investment in Web-based government, telecommunications and human resources) being essential for any substantive progress to be achieved for e-government to really pick up. These 3 fundamental factors together may in fact have a mutually supportive and multiplier effect on e-government take-up both by government departments and their citizens-customers.

Table 1. Global E-Government Rankings 2003 for Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Global Rank</th>
<th>E-Govt. Readiness Index</th>
<th>Web Measure Index</th>
<th>Telecom Index</th>
<th>Human Capital Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>1</td>
<td>0.927</td>
<td>1.000</td>
<td>0.801</td>
<td>0.98</td>
</tr>
<tr>
<td>Australia</td>
<td>2</td>
<td>0.831</td>
<td>0.812</td>
<td>0.691</td>
<td>0.99</td>
</tr>
<tr>
<td>U.K.</td>
<td>3</td>
<td>0.814</td>
<td>0.777</td>
<td>0.675</td>
<td>0.99</td>
</tr>
<tr>
<td>Canada</td>
<td>4</td>
<td>0.806</td>
<td>0.764</td>
<td>0.675</td>
<td>0.98</td>
</tr>
<tr>
<td>Netherlands</td>
<td>5</td>
<td>0.761</td>
<td>0.764</td>
<td>0.710</td>
<td>0.99</td>
</tr>
<tr>
<td>New Zealand</td>
<td>6</td>
<td>0.710</td>
<td>0.552</td>
<td>0.613</td>
<td>0.99</td>
</tr>
<tr>
<td>Japan</td>
<td>7</td>
<td>0.693</td>
<td>0.524</td>
<td>0.626</td>
<td>0.87</td>
</tr>
<tr>
<td>China</td>
<td>8</td>
<td>0.416</td>
<td>0.332</td>
<td>0.116</td>
<td>0.80</td>
</tr>
<tr>
<td>India</td>
<td>9</td>
<td>0.373</td>
<td>0.522</td>
<td>0.027</td>
<td>0.57</td>
</tr>
</tbody>
</table>


Table 2. Taylor Nelson Sofres assessment by country of ‘What is the level of government online use in 2002?’

<table>
<thead>
<tr>
<th>Country</th>
<th>% total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>48</td>
</tr>
<tr>
<td>Australia</td>
<td>46</td>
</tr>
<tr>
<td>USA</td>
<td>43</td>
</tr>
<tr>
<td>Netherlands</td>
<td>41</td>
</tr>
<tr>
<td>New Zealand</td>
<td>40</td>
</tr>
<tr>
<td>Japan</td>
<td>13</td>
</tr>
<tr>
<td>Great Britain</td>
<td>13</td>
</tr>
<tr>
<td>China</td>
<td>Insignificant⁶</td>
</tr>
<tr>
<td>India</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>


Table 2 depicting the level of government online use in the same set of countries as in table 1, also confirms the analysis from table 1 but allows for two very interesting observations. The first observation is that having a high level of ‘e-government readiness’ is not a guarantee to have a proportionately high penetration of government transactions being undertaken online.

The ‘E-government Readiness Index’ is a composite index comprising the ‘web measure index’, the ‘telecommunications infrastructure index’ and the ‘human capital index’. It shows the state of e-government readiness.

The ‘Web Measure Index’ is a quantitative index, which measures the aptitude of governments to employ e-government as a tool to inform, interact, transact and network.

The ‘Telecommunication Infrastructure Index’ is a composite weighted average index of primary indices based on basic infrastructural indicators that define a country’s ICT infrastructure capacity. These are PCs/1000 persons, Internet Users/1000 persons, Mobile phones/1000 persons and TVs/1000 persons.

The ‘Human Capital Index’ is a composite index of the adult literacy rate and combined primary, secondary and tertiary gross enrolment ratio, with 2/3 of the weight given to adult literacy and 1/3 to gross enrolment ration.

Even the U.S with an ‘e-government readiness index’ of nearly 1.0 has a level of government online use of only about 43%, being surpassed by Canada and Australia which have lower e-readiness indices. Interestingly also, a second observation is that a countries like Canada, Netherlands, New Zealand with e-government readiness index lower than that of the U.K have levels of government online use 3 to 4 times than in the U.K. The point emerging is that, while investments in Telecommunication Infrastructure and Human Resources as well as the acquisition of ICT by Public Sector Organizations are prerequisites for e-government development, they will not by themselves lead to an increase in government online transactions, and worse so, to the transformation of public sector, which in any case is beyond the scope of this paper.

Insignificant does not mean there is no e-government transactions in China and India. In fact both have very innovative and creative and successful projects. The ‘Gyandoot’ project in India and the ‘Beijing Zhongguancun e-Park’ are live examples of how third world countries are excelling with the creative adoption of ICT. But they remain only pockets of excellence as opposed to the enormous unexploited potential of e-government.
We are therefore far from the rhetoric of e-government, like 100% government transactions to be done online or the paperless environment that are usually commonly heard from politicians or techno-economic utopian views on e-government. The realities of e-government take-up seem to confirm previous research findings like the one by Margetts (1999) about the inadequacies of techno-determinist approaches.7 There is, however hope, as there is emerging evidence of governments carrying out more and more of their transactions online although there are disappointments as in the case of the U.K. Developing countries like China and India have more to gain by learning from the experience from other countries. Starting late is not necessarily a bad thing as Gao Cai (2003) rightly pointed out. China, which has planned to invest RMB 250 billion (U.S.$ 30 billion) annually in electronic government over the coming years (Zhou Hong Ren8, 2004), has to make sure that this investment does not create a stock of dormant computers in government offices.

So what explains the disparity between e-government readiness index and the actual level of government online use. The answer should surely lie within government as suppliers of electronic services and with the public as those who demand and get involved in government transactions. So by analyzing the supply and demand sides barriers I intend to identify the measures that can be taken to overcome these barriers to e-government take-up.

III SUPPLY SIDE BARRIERS TO E-GOVERNMENT

Government organizations are - to varying extents - different from other types of organizations. While the precise nature of such differences - and the extent to which they have changed with public management reforms of the last twenty years - might be debated - most commentators would concur upon a general list which would include size; the lack of a 'bottom line' in terms of threat of bankruptcy; accountability; separation of policy and administration; public visibility; and the monopoly of some functions. One may expect that these characteristics could lead to distinctive barriers to the 'supply' of e-government. In the 1950s and 1960s, in many countries, government organizations led the field in information technology (IT) provision – but progressively slipped from that role and have - in general - experienced more problems with large-scale IT systems than other types of organization (Bellamy and Taylor, 1998). This troubled history could shape their approach to technology in general and to the development of web-based technologies in particular. Apart from the historical perspective, this section of the paper identifies a number of 'supply-side' barriers to the development of e-government that are particularly applicable to government organizations. First, it identifies barriers deriving from organizational cultures, second barriers derived from organizational values (which also foster distinctive approaches to technology) and third, two further supply side barriers, which seem to offer a particular challenge for government - lack of organizational demand and channel rivalry.

I Bad Historical Experience With Information Technology

The history of government information technology can lead to a poor Information Technology culture for many government organizations, arising from previous bad experiences with IT projects or procurements. Such a culture can mean that organizations approach web development in a 'fatalist' way. Previous experience of ICT projects that ran over budget, brought few cost savings or even failed to work altogether can lead to reluctance to invest in web-based technologies. For example, many in the UK, National Health Service managers were scared off entering into ICT contracts in the 1990s after a series of high profile failures and became increasingly reluctant to spend even budgets already allocated. The poor reputation of National Health Service computing led to an extremely low interest for ICT expenditure in the sector, further exacerbating the problem (Wainright and Waring, 2000). Such a background is unlikely to foster an environment in which managers explore possibilities for innovation via web-based technologies. This barrier to e-government is ironic, because web-based technologies tend to be cheaper and easier to develop than earlier technologies and lend themselves to a 'build and learn' technique quite distinct from the high-risk, big project approach most commonly applied to earlier information and communication technologies. Organizations that can develop a more 'technology-welcoming' approach will be more likely to develop the more appropriate 'trial and error' methods as is normally the approach in the relatively more successful Australian case (More and McGrath, 2002).

II Response to Bad Historical Experience With Information Technology

Alternatively, the organizational response to previous bad experiences with IT can be a 'hands-off' approach by all staff outside the IT department; because they do not want to have, their careers tainted through association with any more disasters. A common response may be a tendency to almost completely rely on technical experts to deal with the problems presented by technology. In such an organization, a traditional style IT department will tend to dominate all the agency's technological developments - including e-government. Widespread private sector experience has shown that traditional IT departments can be the worst unit to lead electronic service initiatives - partly because they have a large amount of intellectual capital invested in earlier technologies and may be resistant to the potential of web-based technologies to render their existing expertise and training obsolete (Davenport, 1992). Dominance of the IT department can result in the kind of techniques used for earlier technologies being applied inappropriately to Web-

7 ‘Techno-determinist approaches’ forecast that the advance of computers and automation would by themselves produce pre-determined common organizational responses.
technologies, for example, an attitude that e-government should be delayed until some future 'big bang' release of the organization’s entire IT infrastructure - which is deemed to necessitate the postponing of low-cost developments of the agency Web site and learning about customers' behavior until very high-cost IT investments have been made as is normally the disappointing case of U.K. (Margetts, 1999).

III Over-Dependence on Private Sector Providers

Such Technology perverse attitude can also lead to a different organizational response - again the organization places complete reliance on experts but this time on a contractual relationship with a private sector computer services provider. This is particularly likely in UK, US, Australian and New Zealand government organizations, most of which have a strong relationship with at least one major private supplier after a series of initiatives during the 1980s and 1990s, including market testing and the Private Finance Initiative (Dunleavy et al., 2001). These relationships or partnerships shape the context within which departments try to develop e-government. For example, departmental personnel can be unaccustomed to instigating technology-based innovations themselves and they may not know what is possible in terms of electronic services. If the contractor is the dominant party in the relationship, then it can be difficult for the government organization to demand Internet-ready equipment without incurring huge additional costs. Contracts (particularly large ones) can take years to negotiate by which time the requirements specified in the contract is already out of date. Technological constraints like not being able to access the Internet from the office can in turn shape the culture of the Department with respect to e-government - web-based solutions are less likely to occur to senior managers if the Internet is almost entirely absent from their working life. In addition, there are few incentives for companies to provide up-to-the-minute equipment when it is not requested - particularly in the case of the large global providers undertaking much of the systems integration and development work for governments.9

IV Staff Perceptions of Client Group

Perceptions of client group are also important. If staffs in an organization view possible e-government developments with extreme suspicion, believing that technology-induced change will be minimal, that benefits at best will be modest and that the safest response is to ignore it. They will be inclined to believe that for example 'our clients don't have access to the Internet' and therefore will be unlikely to think of the Web site when planning how to communicate with them. Likewise, if organizations are not accustomed to value customer contact per se - and in general, government organizations do not - then they are unlikely to appreciate the new possibilities for developing government-citizen relationships that web-based technologies provide. In general, government organizations tend to have a rather fatalistic approach to thinking about what their citizens want, partly because they do not think it is possible to find out. In contrast, private sector companies greatly value the potential of the Internet to provide them with information about what electronic services their customers will and will not use - because the alternative has always been to spend large amounts on advertising, the benefits of which are hard to assess and take a long time to materialize. Changes to web based services however, can be assessed almost immediately via easily obtainable usage statistics and the e-mail responses of customers. Government’s reluctance to institutionalize this method of assessing the value of electronic offerings is a clear cultural barrier to the development of e-government and is illustrated by the (significant) proportion of UK government departments and agencies that do not collect usage statistics (Dunleavy and Margetts, 2002). In the U.S. and the Netherlands, on the other hand where electronic communications are encouraged, the level of government online use is more pronounced as shown in Table 2.

V Organizational and Administrative Values of Weber’s Bureaucracy

In addition to organizational cultures and their negative effects and responses towards technology, organizational values may work against the development of electronic services. It has been suggested that government organizations have distinctive administrative values (Hood, 1991), which have moved throughout the 1980s and 1990s to what Hood calls 'sigma' type values of economy and parsimony, where the priority is the matching of resources to narrowly defined tasks. Although many government organizations have changed over the last twenty years of 'New Public Management', it is still possible in most government organizations to discern the values of formality, uniformity, hierarchy, and robustness. These values all make it more likely that an organization will develop a negative approach towards technology adoption, especially by trying to regulate against unusual occurrences. All are threatened by, and can work against, web-based developments.

VI

i. Formality

First, with respect to formality, widespread use of e-mail in particular challenges formal notions of how government correspondence should be dealt with - seeming to fall somewhere between a telephone call and a letter, but at the same time blurring the distinction between the two. Many government organizations may try to treat e-mails as letters, for example by filing all e-mails on paper. There is in any case a widespread sense that for certain matters, communication by e-mail is inappropriate – e.g. using e-mail to dismiss a colleague would be considered insensitive (Spears et al, 2001: 24) - and this is a particular problem for government organizations, which tend to see its use for

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8 Dr. Zhou Hong Ren is Deputy Director of the China National Information Generalization Experts Committee
many activities inappropriate. And the informality of e-mail addresses creates another problem - it seems unlikely that government officials will become comfortable with the idea that an e-mail address is 'official' enough to be appropriate for government communications. Yet if e-mail addresses are not seen as official, moves towards proactive service delivery will be almost impossible to implement. Formality as an administrative value can also lead to lack of willingness to 'have a try' – an attitude to which the 'build and learn' nature of web-based technologies is best suited. This cultural characteristic of civil service organizations seems to be country specific. UK government organizations, for instance, have a strong tendency to insist that innovations are fully developed before they can be used while Australian civil servants point to their own 'try it and see' approach to technological innovation as pointed out above.

ii. Uniformity

Uniformity is a second administrative value, which is particularly applicable to governments. Differential levels of Internet penetration across different societal groups and the multi-channel approach essential to developing web channels challenge uniformity which is the perceived need to communicate with all citizens in the same way. A more flexible approach, which recognizes that an initiative that would not work with the elderly might work for students, for example, maximizes the potential of web initiatives. Information on the Internet can be more easily individually targeted and personalized than other mass media (Spears et al, 2000: 15; Cooper, 2000). The increasingly sophisticated segmentation, targeting and customization to which web-based strategies are best suited work against uniformity.

iii. Hierarchy

Hierarchy is the most traditional of cultural values of government bureaucracy, its defining feature. In particular, intranets and the sharing of information throughout organizations can challenge hierarchies - and can only really benefit an organization that develops a more networked approach. ICT is distinguished by its ‘network character’. Networks - rather than hierarchies - are the defining feature of the Dutch government (Dutch ICT and Government Advisory Committee, 2001: 10), which could be one reason why government online use is more developed in the Netherlands than in the UK. A hierarchical approach can lead to a very centralized kind of web development. Thus the UK health site www.nhs.uk does not make use of or even link to the numerous useful private sector health sites, such as www.patient.co.uk or even the excellent Web site of the British Medical Journal at www.bmj.org - yet the whole relationship between doctors and patients is being challenged by citizen use of these and countless other sites (Wainright and Waring, 2000). A hierarchical culture can also be particularly threatened by, and develop strategies of resistance against, the more advanced use of web-based technologies by some pressure groups. Disabled groups, for example, see the Internet as a major tool for challenging policy-makers. Hierarchical approaches can also work against one of the key benefits to be derived from e-government - its contribution towards 'joined-up' government. In particular, one-stop shops where citizens receive a variety of government services have been advocated since the 1970s - to overcome the disadvantage to both citizens and government of data being held in several places at once and citizens having to deal with several departments. In the Netherlands talk is now of 'zero-stop shops', where customers do not even visit a counter but are reminded of their rights to a particular benefit or service by the appropriate government agency. But cultural resistance within departments can work against joined-up government. In particular, in the post-NPM British and New Zealand governments where larger departments have been broken up into agencies, agencies as well as departments can have difficulties working together on technology-based initiatives - in spite of the efforts of central co-coordinating agencies (Margetts, 1999).

iv. Robustness

Another traditional defining characteristic of government organizations is ‘robustness’ (Hood, 1991). The dangers to government sites from electronic hackers pose a particular barrier to government’s image of itself as ’robust’. There is a perception within government that transactions with government must be particularly secure - making the introduction of e-government more technically difficult and expensive than it might otherwise have been. Hence governments all over the world tackle the design and development of a public key infrastructure (PKI), which will guarantee secure transactions between organizations and individuals. The Government Gateway, for example, a business portal for UK government currently under development relies on the notion of digital certificates, which organizations have to purchase in order to undertake electronic transactions with government. The Government Secure Intranet (GSI) provides top-level security for officials within government to communicate - and the fact that security levels are set so high works against some of the potential advantages of e-government - GSI might help ‘joined-up government’ more, for example, if local government personnel were able to use it too. Such initiatives can fail to recognize those government transactions that just do not need a level of security higher than non-government transactions; for example, what is the likelihood that individuals or businesses will make tax returns on another’s behalf?

VII Lack of Organizational Demand

Lack of organizational demand can also constitute a supply side cultural barrier to innovation - both intra-and inter-organizational. In some governmental organizations, as noted above in section 3.3, web development can be hampered by the fact that staff themselves do not have Internet access and cannot see their own web sites while at work. Civil servants in some countries (for example, those
countries with higher societal rates of Internet penetration) might find such a situation unthinkable. Although tables 1 and 2 above do not give statistics about the Scandinavian countries – Sweden, Norway, Finland, and Denmark, they are the countries that are presently leading the world in terms of Internet penetration and government online use. The U.S has dropped to the 5th position (Lucas Van Grinsven, 2004). It is indicative that countries which allow for more easy access and use of ICT by its public officers are performing better than others which allow more restrictive use as is the case in the U.K.

VIII ‘Channel rivalry': Competition Between Old and New Ways

Channel rivalry has been a problem for private sector companies seeking to introduce Web and Internet models of selling and organization - and it is an especially important potential barrier for government. The key cause of channel rivalry is that people and organizations that make a good living out of doing things one way will be understandably reluctant to imperil their livelihoods. And in some circumstances their resistance may be able to slow down radically or even stop altogether the development of new Internet-based models. Providing government services online is like asking public officials to create new internet-based channels and put their own jobs at risks. But we do not need to posit conscious opposition (‘sabotage’) by public officials to envisage a possible channel rivalry problem in asking a non-e-administration to become an e-agency. Only a degree of lack of positive enthusiasm allied with a very natural tendency for people’s fear to lose their jobs and not want to embark on courses of action that are unfamiliar can become big obstacles. For the channel, rivalry problem in government to become so severe that progress on e-government slows to a crawl it may only be necessary for officials to show a degree of reluctance and lack of initiative. Research by Dunleavy and Margetts in the U.K (2002) has shown that key symptoms of this kind of reaction could be several or all of the following:

i. A general reluctance to experiment with e-based methods of delivery, until and unless the agency is conspicuously ‘lagging’ behind other agencies;

ii. Tendency to find reasons for inaction and for exaggerated risk-averse behavior on Internet or Web issues;

iii. An unwillingness to divert resources from established ways of doing things to developing Internet communications or transactions;

iv. A tendency to regard putting services on the Internet as something that must be added on to all the activities that the agency does already;

v. A related attitude that any progress on e-government demands the commitment of accompanying additional resources by the government or by higher-tier agencies, without which nothing can be done;

vi. An attitude that no e-government innovation at all can be responsibly entered into until the clearest possible financial case for it can be made, including a high rate of return, but without making any effort to map the consequences of not developing Web or Internet-based interactions, to cost the risk of growing obsolescence in the agency’s IT infrastructure, or methods of working, or to see that a reluctance to develop e-government can lead to a cumulative lag in the agency’s progress;

vii. A chronic refusal to calculate the marginal costs of dealing with clients via office visits, or via letters and correspondence, or via phone calls and call centers, compared with the marginal costs of Internet or Web-based interactions. This stance is usually justified by the claim that since these other modes of interaction are required by law or are already established they cannot be reduced or run down in any way in favor of Web- or Internet-based interactions.

viii. An insistence that because of some unique feature of the agency's business its methods of working can become seriously out of line with those used in other agencies or related areas of the private sector; and

ix. A belief that methods of working in electronic services delivery will soon ‘settle down', allowing laggard agencies to catch up with the current leaders in a once-and-for-all and low cost way or that e-government is a 'fashion' that will soon pass.

IV DEMAND SIDE BARRIERS

E-government services will not justify the investment if citizens do not use them and as Kester et al. (1997) so rightly assert, 'the success of a system is always in the hands of its users'. Clearly, not all barriers to the development of e-government come from within government organizations. In society, there is inevitably a resistance to using the Internet in general and government offerings on the Internet in particular. Hayday (2003) even notes that such uptake is unlikely to be reality 'until today’s tech-literate younger generation grows up’. Issues such as ability to use ICT, access, affordability, and trust in e-government have direct bearing on society’s propensity to use ICT in their dealings with government. This section goes on to identify ‘demand side’ barriers to e-government.

A. Social Exclusion and the ‘Digital Divide’

The most obvious cultural barrier to e-government from the demand side is the problem of social exclusion caused by the problem of unequal access to the Internet per se. Even while Internet penetration continues to rise across all social groups, the ‘digital divide' between those with Internet access and those without seems to be widening; the latest release of the US Department of Commerce's survey 'Falling Through the Net' (2001) suggest that the digital divide between rich and poor, white and non-white, well-educated and poorly educated, has widened significantly during the last five years. Some have argued that an e-elite (Castells,
1996) is emerging as well as an e-underclass (Economist, 24 June 2000), which replicate those of non-Internet society. The e-underclass may end up believing either that e-government initiatives will make no difference to them, or that they will have some kind of damaging effect. And there is evidence that on the web, previously marginal groups may continue to be marginalized when they are connected (Burrows, 2000; Spears et al, 2000; Thomas and Wyatt, 2001). All these characteristics of the Internet society have the potential to work against e-government - particularly as those groups with whom government organizations deal are often the most likely to be excluded.

B. Inability to Use ICT Competently

E-government initiatives have to be capable of domestication (i.e. being harnessed). Social psychological research into how people accept technological innovations show that innovations that cannot be domesticated into personal, everyday routines, are unlikely to be used (Frissen, 2001). E-mail, described by many commentators, as ‘the killer application’ is a good example of a technology that has been domesticated and is being used on a widespread basis. In contrast, although many households in developed countries contain PCs with a wide range of applications, in the majority of households most of these applications remain used –and have not been domesticated. Many innovations just do not have this domestication potential. A look by anyone around himself will show that many educated people can use the PC only for routine typing and normally they cannot use the full potential of the technology at hand. If educated people find it difficult to domesticate technology, the problem is logically more pronounced for people with less education and who may be in more need of government services. Lifelong guaranteed employment in public sector organizations may also not motivate public officers to upgrade their technological proficiency level.

C. Low Citizen Expectation and Trust in Government

Citizens’ existing relationship with government organizations will obviously affect their approach to e-government services offered by that organization. If they have a low expectations from a government organization - then they will not look for that organization on the Internet and will continue to use traditional methods to deal with it. Low expectations can be further lowered by early, bad web sites with very limited functionality, which make it even less likely that citizens will look for such services on the web in the future. Likewise, if citizens do not trust government organizations in general, they are less likely to want to transfer information to government electronically and less likely to believe information that the government transmits electronically. In the UK, trust in national government is low in comparison with other institutions: in 1999, 41 per cent of respondents said that they trusted the national government when presented to them in a list of institutions, whereas 71 per cent said that they trusted television and 67 per cent that they trusted the radio (Euro barometer, Spring 1999). This level of trust (comparable to levels in France and Germany but 25 per cent lower than in the Netherlands) surely shapes the extent to which citizens trust an ‘e-government’. Even in the U.S. which is normally viewed as the country with the most sophisticated privacy laws just witnessed Congressmen improperly accessing 4, 700 personal files of their Democrat counterparts (Ferraro, 2004). Where individuals are accustomed to a conflictual, inflexible relationship with a government organization on paper, they are likely to expect that an electronic version of the organization will be the same and are likely to be less willing to divulge information electronically than they would be to their bank, for example.

D. ‘Solemnity’ of Government Web Sites and ‘Government Exclusion’

‘Solemnity’ (i.e. the state of being very formal) is another characteristic that can pose a problem to web development. In some cultural contexts there is an automatic association of the Internet and web-based technologies with fun or enjoyment. As one marketing consultant put it, Japanese people buy more gadgets than in any other nation because 'technology has been translated into enjoyment in Japan for many years’ and mobile telephones are marketed to schoolgirls as fashion jewelry. Officials in the city government of Amsterdam, one of the more advanced of Dutch municipalities in terms of e-government, stressed 'fun' as the most important design element of their web services. But belief in seriousness - rather than fun - runs straight through virtually all UK government organizations' approach to the Web. Government sites are conservatively designed, use bureaucratic language and contain no incentives other than strict functionality for users to explore the site. Seriousness as opposed to ‘fun’ web sites could be one of the factors that encourage or discourage Web site visits and may be account for more government online use in some countries than in others. Along the same line, governments may, by trying to have everything of their own forego the opportunity to take the goodwill of already established Websites, and better-known to the public. Non Governmental Organizations Web sites, for instance, may be better-known by the public than a new Government Website. There should no harm that government tries to reach its audience through such web sites instead of being completely ignored by the public.

E. Unclear Citizen Benefits

There must be clear citizen benefits for what is being offered electronically - citizens have to need or want it and see clear benefits for using electronic media rather than more traditional means of communication or transacting. Government organizations may interpret low usage figures as sign of low demand for electronic services - but they are more likely to signify lack of demand for the given service in particular (or a badly designed website). During a recent housing shortage in Amsterdam, one of the social housing corporations put all available homes on the Internet - and
immediately received 30,000 hits a day. After one week, they had to put advertisements on the TV to say the servers were overloaded. When the demographics of users were analyzed, there was no difference found between poor/rich, ethnic minorities, low/high education - only in age. Evidence like this suggests that where citizens really want something, they are willing to try electronic communication. In Singapore, on the other hand, the government passes on some of the savings made from electronic transactions by lowering the cost of fees to citizens (IDA, 2003). Of course one has to be careful, because Singapore is not a full liberal democracy in the proper sense of the word. If however, services are not available, another barrier to their development might be a lack of proactively 'demanding' citizens. In countries with high rates of Internet penetration, government organizations may be under more societal pressure to provide services electronically. Therefore, increasing Internet penetration could well be a strategy to increase pressure for government to offer their services online.

F. High Transaction Costs of Change

The transaction costs of change, of transition to using an electronic medium, can create a strong initial barrier for citizens to adopt electronic communication with government. For people to change an established way of doing something (such as filing a paper income tax form) and instead to adopt a new technology or channel of communication (such as sending in an electronic tax form) there is a substantial immediate cost - the cost of finding relevant information, the time and possibly frustration costs of learning a new way of doing things, the cost of putting right any mistakes produced by unfamiliarity, and so on. Studies of human behavior have repeatedly shown that very small, up-front transaction costs like these may stop people from making an investment of time or energy that would pay them back many times over in the slightly longer run. Once electronic services have been introduced and are being used, government agencies also need to look out for possible costs or 'negative incentives' that can result from disparities developing between electronic and non-electronic service delivery. For example in the US, electronic filing of taxes actually fell by 3 per cent during 2000-2001, as taxpayers became aware that electronically filed forms were scrutinized more thoroughly than those filed in paper form. Such disparities clearly work against citizen benefit from electronic initiatives and can make citizens more reluctant to enter into electronic transactions.

V OVERCOMING BARRIERS TO E-GOVERNMENT

Identification of barriers is one step towards e-government - the second is, of course, to overcome them. Overcoming barriers may have to involve tackling the barriers at the heart of resistance to e-government. This section includes some suggestions for ways round the obstacles outlined above.

A. Incentives to Staff

Incentives for change are important for staff, in order to overcome the channel-rivalry problem (section 3.7 above). Where non-electronic means of administration are still predominant, then it is important to recognize that existing staff can see their whole future as bound up in the continuation of paper-based systems of administration. Older staff and perhaps staff in the most senior positions can especially feel threatened if large-scale changes of work practices are in prospect, perhaps feeling that they are 'too old to change their ways now', and also finding Web and Internet based models of administration unfamiliar and technically threatening. Even if staff have assurances of job security or any downsizing in staff taking place through voluntary redundancies or natural wastage, it is important to appreciate that an organization transitioning towards a 'fully digital' model will not be the same. The systems of control, the hierarchy of management roles, the kinds of people who rise to the top - all these may change quite quickly. This may mean improvements in job satisfaction for many. Private sector experience has shown that moving to electronic processes can remove routine tasks while allowing staffs that remain to become more skilled - but such changes have to be carefully presented.

B. Show Benefits to Citizens

Likewise, citizen benefits of e-government can be maximized by using incentives to encourage citizen uptake of electronic services. If government can cut costs by delivering services electronically, it must seek to pass on as much of that cost-reduction as feasible to citizens - which in turn may increase take up, and further reduce the cost of government service delivery. To achieve this spiral, government organizations needs not just to look to save money itself but to add incentives that help citizens overcome the considerable change or transition costs of learning how to do something electronically. Financial incentives can be offered for citizens to file taxes electronically. In the Netherlands and Singapore, for instance, taxpayers are promised any refund by a certain date if they file via the Internet. Such incentives have to be realistically designed so that they really are incentives - if financial incentives are offset by additional expenses (such as buying appropriate security measures, like digital certificates) then they may obviously not work.

C. Organizations Should Be Ready for Initial Transition Costs

To overcome the initial barrier of transaction costs (section 4.6), the introduction of incentives may need to follow private sector business models and practices, recognize explicitly that there are transaction and transition costs and then plan in an active way to overcome them. For instance, when banks introduced new technologies, they ran special campaigns in which staff take people through in a personal way how to use the new arrangements, whether ATM
machines, or phone/correspondence based accounts without counter service, or Internet banking. Another similar example concerns airlines trying to get passengers to use automatic ticketing and check-in machines in order to cut queuing times and allow them to cut down on staff costs of operating so many check-in desks. Even though passengers who make the transition will be much better off, people may be very reluctant or unsure whether they can switch and need counseling and active help to do so. So agencies may need to go through a higher cost transition phase in the short term, with more personal interactions with customers by staff or more extended average interactions for a time, in order to be able to reap the longer term advantages of electronic interactions.

D. Bridging the ‘Digital Divide’ and Increasing Social Inclusion

With regard to the question of unequal access to the Internet and therefore the possible 'social exclusion' barrier to e-government (section 3.1), central government has to think hard about ways of widening Internet access in general through centrally sponsored local initiatives or otherwise. Important is to make ICT accessible to sections of the population who otherwise on their own can never afford same, either because of cost, illiteracy, fear of new technology etc. Having an intermediate level of e-government may also be a plausible solution in developing countries where the masses are still illiterate. In Brazil for instance, there are mobile government offices fully equipped with ICT and they move from one village to another allowing people to engage in online transactions through public officers operating these mobile vehicles. There hundreds of such creative solutions being used around the world and which can be accessed in the ‘E-Government Handbook for Developing Countries’ (Khalil et al., 2002).

E. Overcoming Solemnity of Government Websites

Solemnity (4.4) of government web sites might be overcome by a more casual approach to Internet use within organizations. Many government organizations (particularly in the UK) insist that their employees do not use the Internet for any kind of non-government use, which in the case of some departments can apply to almost all sites (one department, for example, prohibits its employees from using sites connected with travel, leisure, sport, entertainment of any kind and indeed the overwhelming majority of non-government sites) (Dunleavy and Margetts, 2002 ). Yet creativity can be required to develop web-based solutions to government problems – and it may be that organizations full of staff actively using the Internet may be better placed to think in this way. For this reason, when the intranet of the Australian social security organization, Counterpoint, crashed after a significant proportion of employees were checking cricket scores on the ABC network during a crucial match, it was interpreted as a positive indication that staff were using the intranet (Broughton and Chalmers, 2001). Such a positive attitude to Internet use by staff might actually encourage a more ‘technology positive’ attitude and contribute to development of e-government. To successfully develop Internet services, the Internet has to 'embedded' into everything the organization does. If we want technology to be ‘domesticated’ allowing freer use of ICT rather than controlling their use may be advisable.

F. Overcoming Government Exclusion

Finally, in order to overcome the 'government exclusion' barrier, government organizations have to think creatively about increasing their 'nodality' - the extent to which they are at the center of social and informational networks (Hood, 1983). This may actually require a substantive change to thinking about web development - rather than focusing on their own Web site, organizations might have to think in a 'de-centered way' about the extent to which their services are offered on the sites of other organizations. So an environmental agency that gives advice on sustainable products might need to liaise with a variety of retailers to ensure that their information is presented. In the same way, to make innovations acceptable to citizens, government organizations have to develop ways of understanding how citizens use the Internet, what they use it for, what underpins societal myths about technology - and what innovations could be 'domesticated' (see 4.2). This kind of thinking about web development can mean overcoming the barriers of hierarchy and formality and accepting that a centralized and controlling strategy may not make the most of what the Internet has to offer.

VI Conclusions

The tools of e-government have created a new technological environment for both citizens and governments. Different institutions and societal groups - with different organizational cultures - will have different cultural responses to the possibilities that these new technologies provide. As Hood (1998: 199) put it, 'a cultural theory analysis suggests that any given technological change can lend itself to very divergent visions of social modernization'. This paper supports that claim and makes clear the inadequacy of techno-determinist approaches that forecast that, in and of themselves, the advance of computers and automation would produce pre-determined and common organizational responses. The point made in this paper is that investment in Telecommunication infrastructure and Human Resources as well as the acquisition of ICT by Public Sector Organizations are pre-requisites for the development of e-government. They are, however inadequate, in that they will not by themselves lead to an increase in government online transactions. What may be required are strategies to overcome the institutional, organizational, cultural, social, and psychological barriers to e-government both in and out of government. The greatest resistance or barrier remains people leading some researchers to claim that the potential of e-government can only be tapped when the present technology-savvy generation takes over from the old and
present generations of public officers and citizens. I disagree with this overly pessimistic view.

What may be required is to increase the ‘Technology Readiness’ of public officers and citizens alike. By ‘Technology Readiness’ I mean people’s propensity to embrace and use new technologies for accomplishing goals in home life and at work. People as consumers simultaneously harbor favorable and unfavorable views of technology, and the relative dominance of favorable will vary across individuals. People’s/Consumers’ propensity to embrace technology may vary widely, resulting from an interplay between drivers (optimism, innovativeness) and inhibitors (discomfort, insecurity) of technology readiness. Indications are that massive investments will be required not only in physical ICT infrastructure, but also in terms education and training of both public officers within government and of citizens outside government. IT literacy may not be adequate. What may be required are IT proficient public officers and citizens. Increased access to ICT by the largest possible number of people is another very important strategy – increasing the number of access points, decreasing cost of access, increasing the number of people having access and also the ease with which access may be obtained, may be important ingredients. We may very well be in a process of social re-engineering of government and society/citizens in trying to increase the uptake of e-government by increasing the Technological Readiness of the population of a country and its access to ICT.

VII REFERENCES


