



# Bringing in the users: The role for usability evaluation in eGovernment



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## ABSTRACT

During the last decade, various types of eGovernment evaluations have been proposed. These evaluations have primarily focused on international benchmarking using supply side metrics. Demand for eGovernment has been largely ignored. Recently, this oversight has been recognised, but research in this area is still in its infancy. This paper proposes the use of an already established usability literature from computer science. Advantages of applying usability methods to eGovernment include recognising barriers to use, identifying future development priorities and using already existing methods to assess and compare online offerings. Importantly, the inclusion of and focus on real users also fits with the wider government ideals of greater public participation and strengthening democracy. To highlight the potential of such an approach, we present a case study. Usability methods, such as presented here in a user survey, can develop new insights by expressly targeting different user groups and through open-ended questions. The outcomes of this method are immediately useful for prioritising and undertaking future online development as well as comparing eGovernment provision.

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## 1. Introduction

There has been a rapid take up and integration of the internet and other ICTs (Information Communication Technologies) by government from the 1990s. This application of ICTs to government processes is referred to as eGovernment (OECD, 2001). Seen as an integral part of the modernisation of government, eGovernment had a profound effect on the organisation of the public sector, their management tools and service delivery (Eliassen & Sitter, 2007).

Benchmarking has been widely applied to evaluate the outcomes of expenditure on eGovernment. However, to date, benchmarking has been overly focused on supply side metrics (Bertot & Jaeger, 2006; Gauld, Goldfinch, & Horsburgh, 2010; Irani, Love, Elliman, Jones, & Themistocleous, 2005; van Dijk, Peters, & Ebbers, 2008; Verdegem & Verleye, 2009). This focus largely ignores the role of demand in determining the success or otherwise of online initiatives. By including real users in eGovernment evaluation, comparisons of different services are more likely to reflect actual use and demand. The usability literature from computer science has developed a range of tools to assess the suitability of different websites. Of these, user surveys have the potential to facilitate user assessments of eGovernment as well as provide crucial feedback through open ended questions which can be used to set development priorities.

In Section 2, this paper describes the rise of benchmarking as a method to evaluate eGovernment and explores both the advantages and limitations of metric-based benchmarking as an appropriate method of assessment. It then proposes an alternative and complementary

method of evaluation based on usability research. To this end, a case study which applied usability measures to local government websites is described and discussed in Section 3. The results of this case study are used to illustrate the benefit of such approaches in assessing online services and provide a dual benefit of feedback on particular services which need improvement. The final two sections of the paper present a discussion and conclusion.

## 2. Benchmarking

It was assumed that eGovernment would lead to a range of benefits including improved service delivery, trust in government, participation, transparency and accountability (e.g., ISC, 2003; Meskell, 2003). However, there was little examination of how these objectives would be obtained (Milner, 1999). While digital delivery of services can significantly reduce the costs of service provision and simultaneously increase the ease with which the citizen receives services from the government (Deloitte Research, 2000), it also brought spiralling costs, overspending and scandals surrounding the awarding of contracts (West, 2005). With questions over the costs and priorities of eGovernment, it is obvious that some form of critical assessment was needed. Benchmarking is the use of performance metrics to compare different organisations or different sectors in the same organisation. It is a practice widely used in business. Metrics, such as cost, productivity and quality, are used to identify best practice and areas for improvement or implement new processes or practices (GVRL, 2009). Rankings across eGovernment provision can isolate areas which are not currently performing adequately.

The sole use of supply side benchmarking in determining the success or otherwise of a country's implementation of eGovernment has been criticised (Bannister, 2007; Janssen, Rotthier, & Snijkers, 2004;

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Kunstelj & Vintar, 2004; Sharma, 2004). Benchmarking measures can most easily evaluate low-hanging fruit (services and information that are easily measured and counted) rather than structural changes (Janssen et al., 2004) or significant reorganisation (e.g., back office processes). The inclusion or exclusion of variables and countries across international benchmarking studies varies. Some, such as the CapGemini study in the European Union (CapGemini, 2007), have a more obviously defined study area, while others, such as the Accenture (2002, 2004) reports, have a less geographically defined selection which also changes over time. The definition of variables across the different studies change and measurement elements in one study can be absent from another. Through the inclusion or exclusion of countries or variables in the study, rankings can vary significantly (Bannister, 2007). Differences in the makeup of internet users and internet penetration will also affect the effectiveness of online services. As eGovernment develops, measures must be updated to accommodate technological developments (e.g., systems for digital signatures) and changes in the application of these technologies. The definition of eGovernment also differs and in many cases was defined “...too narrowly only in terms of offering electronic services online” (Kunstelj & Vintar, 2004, p.131). At a more conceptual level, government policies can differ substantially and this may be reflected in the provision of services and the definition of these services. However, as Fitsilis, Anthopoulos, and Gerogiannis (2010, p. 70) note there are “common targets for eGovernment”.

On a more fundamental level, it is important to understand the focus of the benchmarking study and drivers for these studies. Some studies (such as Accenture, 2002) focus on administrative aspects of eGovernment and are produced by private companies. In comparison, West's (2008) university-based study has a more political focus while other studies are government-sponsored (e.g., CapGemini, 2007) and reflect specific eGovernment policy objectives. Differing focus will mean that different measurement tools will be used and countries will achieve different ranks. The majority of studies evaluate top-down using each country as the reporting unit (Janssen et al., 2004). A top-down approach sets metrics centrally and is not tailored for individual services or entities. Such an approach follows the development of most eGovernment strategic plans where policies and targets are set centrally but methods and procedures are left to the discretion of implementing organisations (Anthopoulos, Siozos, & Tsoukalas, 2007). Most benchmarking studies focus on citizen interactions, however, interactions by individual citizens with government are relatively rare (Heeks, 2006). Interactions are limited to irregular events, such as applying for planning permission, and regular service-based interactions, such as paying their motor tax, but few interact with the policy aspects of government individually. Business and government use may be more suitable targets for in-depth evaluation due to a greater frequency of contact.

### 2.1. The case for change

The outcome of many eGovernment benchmarking studies is the reporting of changes in ranks or comparing positions of different countries (e.g., Hicks, 2010; Irish Times, 2009). These results can drive IT strategies nationally (Heeks, 2006) where priorities are identified without access to user data, need or expectations. These shortcomings have led to a demand for user centric evaluation as argued by Verdegem and Verleye (2009), Cullen and Hernon (2006), Bertot and Jaeger (2006), and Gauld et al. (2010) among others. The movement towards citizen awareness reflects a greater government awareness of the citizen as a consumer and fits with the movement from public administration to new public management (Eliassen & Sitter, 2007). Accenture (2004), for example, undertook a series of surveys, focus groups and interviews to gain a more representative measure of eGovernment. Other studies, such as SIBIS (2003), took a demand rather than supply focus. These initiatives have moved beyond simple ranking and can reveal interesting insights into how eGovernment should be structured. For example, “...familiarity with online services and greater online usage

goes hand in hand with a positive attitude toward e-government” (SIBIS, 2003, p. 8).

Supply side benchmarking as the sole method for identifying and setting eGovernment development priorities is inadequate. It is limited when evaluating the effectiveness or added value of online provision within a country. Consequently, more demand focused approaches are also needed. Usability engineering is a set of general principles which focus on the user throughout the whole life cycle of the system (Nielsen, 1993) and supply a set of evaluation tools which allow an assessment of the provision of public information. It is concerned with quality, ease of use, learn-ability and the overall effectiveness of the system for specific tasks (Davies & Medyckyj-Scott, 1996). The usability of the system or product should aid the undertaking of user tasks and is generally noticeable by its absence rather than presence. A product that is hard to learn and difficult to use will not sell well and Dumas and Redish (1999) contend that usability is of primary importance to users over price or performance. The benefits to commercial companies include increased sales, improved company reputation and customer trust in the company, a reduction in the support required by users and a lowering of training costs and the costs associated with the creation of support documentation (Dumas & Redish, 1999).

Evaluation is central to usability theory and practice (Davies & Medyckyj-Scott, 1996). Testing evaluates the usability characteristics of the website and identifies any weaknesses (Levi & Conrad, 2008). Extensive user testing is the most effective, albeit costly, measure employed. User testing requires the use of real users of the website and cannot be completed by the developers or employees of the company. If real users are not involved or if the participants are familiar with the technology or tasks, problems may be missed (Dumas & Redish, 1999). However, the number of users generally involved in a user evaluation of a website is small, as usability testing focuses on the identification of the largest number of problems within financial and time constraints (Dumas & Redish, 1999). Identifying and developing an understanding of the characteristics of users are fundamental steps in the design of a successful website (Dumas & Redish, 1999). User characteristics, such as domain knowledge, education, age and computer experience allow designers to pre-empt certain difficulties users may encounter with the system (Nielsen, 1993). A clear idea of the user and their behaviour should guide online structures and service delivery.

Usability methods are not without their limitations. Usability approaches can be time consuming and some usability methods require face-to-face and one-to-one interaction with users. Contacting users to form a representative sample can also be difficult especially where customer-supplier relationships are electronically based. Depending on the usability method employed, comparison across services is problematic as different usability issues will be identified by different users. The results of these methods can also prolong the development of the product or service. As strict user testing is not always suitable, there are a number of other techniques that developers can employ and among these are; heuristic evaluation (testing against core values or guidelines, such as consistency) (Nielsen & Tahir, 2002), assessing user logs (Levi & Conrad, 2008), the qualitative summary of public enquires (Richard, 1999), focus groups and surveys (Dumas & Redish, 1999). See Dumas and Redish (1999), Nielsen (1993) and Rubin and Chisnell (2009) for guides to usability testing.

The motivation to consider usability for government is not as clear as for private industry. As the public agency is usually a monopoly in the provision of services, increased sales will not be a factor. The US Department of Labour acknowledges the absence of profit motivations but highlights possible savings in support costs such as reducing pedestrian traffic to offices or replying to letters or emails (Levi & Conrad, 2008). Increased trust of government services may also prove attractive if it can be converted into greater public engagement or trust in government. However, this link remains to be proven. The provision of public information differs from that of other information in the requirement to fulfil a public service for all citizens and, ideologically, to inform all

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