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Abstract

This paper describes an ongoing study into the quality of service provided by the Irish Revenue Commisioners' on-line tax filing and collection system. The Irish Revenue On-Line Service (ROS) site has won several awards. In this study, a version of the widely used SERVQUAL measuring instrument, adapted for use with on-line services, has been modified for the specific case of ROS. The theory behind this instrument is set out, the particular problems of evaluating revenue collecting on-line are examined and the rationale for this approach is explained

Keywords: Revenue Online System, E-S-QUAL, website service quality

1.0   Introduction

Benjamin Franklin once said that only two things in life are certain: death and taxes. It is no surprise therefore that the computerisation of taxation has been at the leading edge of e-government for many years. In surveys of e-government carried out over the past five years, (Accenture 2006; CapGemini 2001, 2006) the computerisation of taxation services is one area in which all countries European countries score highly. One aspect of collecting tax on-line is making the process attractive to citizens. While governments and tax authorities can provide various inducements (such as later payment dates) for citizens to file on-line, a key factor in the success of such systems is the design quality of the public interface. Perceived service quality has become a critical determinant of website success in all areas of commercial life. It is even more critical on a site that requires the citizens to declare their income and/or assets and possible pay over some of their hard earned cash to the state. Studies show that many consumers view the service quality delivered by commercial websites to be unsatisfactory (Gaudin 2003). There is as yet no significant evidence to suggest that citizens' view of e-government service quality differs. Accenture (2005, page 4) comment that:*"While governments have certainly seen some value in terms of*

increases in citizen satisfaction and internal efficiency and some reductions in costs, none has been transformed by eGovernment alone. eGovernment simply has not led to the reinvention of service delivery". It is therefore essential that government bodies seeking to encourage citizens to use their on-line services understand the dimensions of website service excellence that their citizens value. This paper will discuss an investigation of the Irish Revenue Commissioners' Revenue On-Line Services (ROS) web site. The study is expected to provide interesting insights and have implications for Revenue at a number of levels including an understanding of the dimensions of service that are valued by Irish citizens who use the on-line service to file their tax returns. It also expected to provide evidence that Irish citizens' perception of on-line revenue service quality is driven by specific factors, all of which it is possible for government to manage, and establish the dimensions of service quality that create, or in their absence inhibit, citizen trust in Revenue Online Services.

2.0   The Computerisation of Taxation Services

Whatever the list of tentacles of government that have been computerised in any country, it is certain that the collection of tax revenues is one of them. As one senior tax official once put it, it is much easier to persuade governments in general and Treasuries/Ministries of Finance in particular to part with taxpayers' funds for investing in ways to collect money than it is to get them interested in putting money into ways to spend it. In Ireland, the body that collects taxes is called the Revenue Commissioners, usually referred to as Revenue. This is the equivalent of the Internal Revenue Service in the US or the Inland Revenue in the UK.

The Revenue Commissioners have a long record of leadership in the use of information and communications technology. They were first in the Irish public sector to make extensive use of computing and in 1964 purchased the public sector's first ever mainframe computer (Pye 1993, Connolly 1986). In subsequent years the Revenue have continued to be at the cutting edge of computing although, in a manner common to public sectors the world over, the systems that they developed tended to be in silos. In particular, for many years, the functions of tax collection and excise duty collection remained separate.

In 1993, the Revenue launched a ten-year project entitled CONTAX (for Consolidated Tax project). This ambitious project set out to re-engineer all of the computer systems in the Revenue, moving away from the mainframe world towards a modern distributed system. This modernisation effort was almost entirely internal. The first step by the Revenue to what is commonly (if rather unfortunately) termed e-government came with the launch of Revenue Online Services or ROS in September 2000 (Revenue Commissioner, 2001). Heretofore, it had been possible to submit tax return information to the Revenue electronically. However this had been a largely batch process and restricted to companies with the technical knowledge to manage the complicated interfaces involved. ROS was part of Revenue's drive to eliminate paper, simplify the processing of making returns and increase levels of tax compliance, particularly filing by the return deadline.

On-line filing of tax returns had several important differences from most other types of on-line e-government transaction. Important aspects include the exceptionally high level of security involved; the annual surge in the volume of transactions; and the need to provide users with a variety of tools. The first of these is self-evident. Tax returns contain a large amount of commercial and personally sensitive information. A system therefore needs not only to provide strong encryption (whilst also being simultaneously easy to use). Citizen trust in the system is essential if it is to succeed. While the Revenue can provide incentives for people to file on-line, it is not in a position to make this mandatory. It needs to lure people to the web and reliability and trustworthiness are key components of its strategy to do this. Secondly, the system needs to be able to deal with large volumes of transactions over short periods of time. It is in the nature of companies and people to file tax returns at the last possible moment (sometimes there is no alternative but do to do this). The resultant spike in transaction volumes caused ROS problems in 2003, its third year of full operations (TALC 2004). This problem was subsequently solved and has not recurred despite enormously increase volumes (see Table 1). Thirdly, such a system needs to provide users with a number of off-line tools with which to work. Many companies and individuals may wish to try out various ways of classifying financial information on their tax returns. While it would be helpful if there were only one right way to complete a return, there are often several options and more sophisticated users, particularly tax specialists like to undertake 'what if' type analysis before they submit

the return. While this might be done on-line, a worry could be that the Revenue's computer might be keeping a record of customer's actions. To overcome this, off-line tools would have to be provided.

ROS went live properly in 2001. Initially it was only for companies and for the self-employed. There were several reasons for this. One of the more important was that the was a considerable cost involved in generating digital certificates, so extension to the general run of pay-as-you-earn (PAYE) taxpayer would be expensive. Also, it was felt, at the time, that many PAYE taxpayers would not have computers with on-line access so there was little point in setting up a system for the small number of such taxpayers that might use it. In 2006, after three years of successful operation, ROS was extended to PAYE earners. This brought a new, and much larger, group of customers into the system.

With this extended audience of private citizens, it has become even more important that the Revenue, and by extension all government bodies seeking to encourage citizens to use their on-line services, understand the dimensions of website service excellence that their citizens value. This has the potential both to improve the uptake of services and increase citizen satisfaction with public administration.

The scale of government investment in electronic services can be gauged from the various benchmarking reports on e-government (see, for example, Accenture 2005, 2006; CapGemini 2001, 2005, 2006). As already noted, when looking at progress to date, it is not surprising to find that the aspect of e-government which tends to be most developed and most widely used is on-line tax filing. According to the US Internal Revenue Service, 73 million taxpayers filed on-line in 2006 (Internal Revenue Service, 2007). In the UK, 2 million business and agents filed on-line in 2005 (HM Revenue and Customs, 2007).

The design of an on-line tax filing system must address a number of specific challenges that are not usually factors in the design of other types of on-line government services. Two, have already been mentioned, namely the need for exceptionally high security and the ability to handle large surges in the number of transactions at certain times of year. The system must also reflect the composition of

its customer base. This ranges from professional tax advisor and agents to citizens who may have only a hazy notion of the tax laws. The system must be able to meet the needs of both these constituencies as well as several others. Furthermore, it needs to be able to hand a variety of different forms of taxation including income and corporation tax as well as VAT and different forms of capital taxation. The ROS website and service had been one of the notable successes of Irish e-government and has won a number of awards (Revenue Commissioners 2004). According to Accenture (2005), ROS also reported savings of €600,000 in postage alone and 30 man-years per annum in processing effort in 2005.

This study described in this paper has three objectives: It is seeking to identify the dimensions of website service quality that are valued by Irish citizens who use the Revenue Online Service to file their tax returns. It is examining the degree to which website service excellence influences consumer trust in electronic government. By applying the newly operationalised e-S-QUAL measurement instrument, it is exploring the relevance of this instrument in the evaluation of e-government website service quality generally. The approach is to use a modified version of a well-established service quality tool. This is described in the following section.

3.0   Service Quality

Service quality is one of the most researched topics in the area of service marketing. Although research into the dimensions of website service quality that are valued by on-line consumers is in an embryonic stage, it is a topic of considerable importance. Research into on-line services quality is in a relatively early stage in comparison with the well-established tools used in service marketing. However, as on-line competition intensifies, the need for vendors is not only to differentiate their website, but to ensure that they do not shoot themselves in the foot as a result of poor web design. Anybody who has used a variety of web service sites will be aware of sites that are poorly laid out and frustrating to use. Good design has therefore become a differentiator. Because there are so many poor sites out there, a vendor can still gain competitive edge by having the basics right. The question is what are those basics? What is it that consumers look for, consciously or unconsciously, when they visit a web page?

When competing for customer loyalty, a key indicator of success in a crowded on-line market, this is a critical thing to know.

Service quality can be defined as the difference between customers' expectations for service performance prior to the service encounter and their perceptions of the service received Asubonteng et al (1996). When performance is not up to expectations, people will consider quality to be low and when performance exceeds expectations, the perception of that quality improves. So in any evaluation of service quality, customers' expectations are fundamental to that evaluation. Moreover, Asubonteng *et al.* (1996) suggest that as service quality increases, satisfaction with the service and intentions to reuse the service increase.

Customer services requirements have two aspects: what the customers want and what standards must be met. Both need to be measurable and this is where the problem arises. For example, Swartz and Brown (1989) distinguish between the consumer's post-performance evaluation of 'what was delivered and the delivery process itself. The former evaluation is referred to by a number of different names including 'outcome quality' (Parasuraman *et al*., (1985), 'technical quality' Grönroos (1983) and 'physical quality' Lehtinen and Lehtinen (1982). The latter evaluation, i.e. the evaluation of the services process, has been termed 'process quality' by Parasuraman *et al.,* 'functional quality' by Gronröos and 'interaction quality' by Lehtinen and Lehtinen respectively.

The most widely cited measure of service quality is SERVQUAL. This instrument was developed by Parasuraman *et al.* (1985, 1988). It has been has been used to measure service quality in a variety of settings such as health care (Bowers *et al,* 1994); large retail chains (Teas, 1993); fast food restaurants (Cronin and Taylor, 1992), a dental clinic; a tyre store; a hospital (Carman, 1990). SERVQUAL is designed to measure service quality from a customer perspective. It comprises five basic dimensions each representing one of the service attributes that consumers use to evaluate service quality. The five dimensions are tangibles; reliability; responsiveness; assurance; and empathy. As already noted, in their model, Parasuraman *et al*., (1985; 1988) suggest that it is the gap between consumer expectations and actual service performance that informs service quality perceptions.

Consequently, it is this performance-to-expectations gap that forms the theoretical basis of SERVQUAL. Again, as already noted, Parasuramam *et al.*, observe that the evaluation of service quality is not based solely on the service outcome, but also on the evaluation of the *process* of service delivery.

Notwithstanding its wide usage, SERVQUAL remains contentions and there have been criticisms about its validity and accessibility. One criticism is of the supposed causality of the link between service quality and satisfaction (Wolfinbarger and Gilly, 2003; Bitner, 1990), and the question as to whether one scale can be universally applicable in measuring service quality regardless of the industry or environment Asubonteng *et al.*, (1996); Cronin and Taylor (1992, 1994); Teas (1993); Cox and Dale (2001)). A further question mark over SERVQUAL is the numerous small changes that are made to it, even by researchers that claim to be using this model (Paulin and Perrien, 1996). A number of other models for measuring service quality in an offline context have also been proposed. These include SERVPERF and the Normed Quality model. SERVPERF was developed by Cronin and Taylor in 1992 and determines service quality by measuring only performance (instead of performance and expectation like SERVQUAL). The authors argued that this would provide a better reflection of customers' perceptions of service quality. The Normed Quality model that was proposed by Teas (1993) measures service quality by the gap between perceived performance and the ideal amount of a feature, rather than the customers' expectations presented by SERVQUAL. While each of these models are valuable and provide a new perspective on how service quality can be measured, it is worth noting that they were developed specifically for the measurement of service quality in the offline context and therefore whether and to what degree they are applicable to an online context remains undetermined.

4.0   Website Service Quality

Website service quality, often termed e-service quality, has been defined as "…consumers' overall evaluation and judgement of the excellence and quality of e-service offerings in the virtual marketplace" (Santos, 2003), and as "as the extent to which a website facilitates efficient and effective shopping, purchasing and delivery" Zeithaml (2002).

The quality of e-service does not stand still. Because it is so easy to copy in the on-line world, any feature introduced by a company can be quickly matched by its competitors. The result is an accelerated form of evolution with new ideas emerging, changing surviving or dieing at a rapid rate. Quality is honed by competition (Trabold *et al.,* 2006). Notwithstanding evidence of continuing consumer dissatisfaction with service delivered through the Internet (Gaudin 2003), studies of e-service quality remain limited and frequently employ instruments that were developed for use in a traditional environment (such as SERVQUAL. See, for example, Van Iwaarden *et al.,* 2004). This despite the obvious problem that SERVQUAL and similar instruments were and are not designed to examine quality factors in on-line environments.   In such circumstances, the results must be, at the very minimum, questionable. This is not to say that 'offline' models contain nothing of value. They can provide a useful platform or starting point for an on-line equivalent (Van Riel *et al*., 2001), but there is now an increasing awareness that the SERVQUAL instrument is limited in terms of its ability to measure e-service quality, particularly as there are dimensions of service quality that are unique to the electronic context (Cai and Jun, 2003). Cox and Dale (2001) argue that dimensions of service quality specific to a traditional environment such as competence, courtesy, cleanliness, comfort and friendlinessare not either not important and/or not relevant in the electronic retail environment. Other dimensions are not measured by SERVQUAL, for example: accessibility, communication, credibility and appearance which are much more significant. Long and McMellon (2004) support this view. They argue that factors such as geographic distance and the facelessness of the experience form part of the on-line service experience and should therefore be part of any e-service quality measurement instrument. Several researchers have proposed scales to evaluate websites. Unfortunately, many of these scales do not provide a comprehensive evaluation of the service quality of the website. For example the objective of the WebQual scale (Loiacono *et al*., 2000) is to provide website designers with information regarding the website (e.g. informational fit to task) rather than to provide specific service quality measures from a customer perspective; Barnes and Vidgen's (2002) WebQual scale (both of these WebQual instruments have the same name but they are different) provide a transaction-specific assessment rather than a detailed service quality assessment of a website; The SITEQUAL scale (Yoo and Donthu, 2001) excludes dimensions central to the evaluation of website service quality as does Szymanski and Hise's (2000) study; The

eTailQ scale proposed by Wolfinbarger and Gilly (2003) has been the subject of some reservations expressed by other researchers (Parasuranam *et al.*, 1995). Recently however, many of these concerns have been addressed by the original authors of the original SERVQUAL instrument. A new instrument has been developed called E-S-QUAL (Parasuraman et al. 2005). This is a four-dimensional, 22-item scale instrument designed to capture the core dimensions of service quality as found in the current literature. The four dimensions are Efficiency, Fulfilment, System availability, and Privacy. There is also a special accompanying subscale, E-RecS-Qual, specifically designed for customers who have had non routine encounters with an on-line service provider (such as service problems or breakdowns). E-RecS-Qual consists of a three-dimensional, 11-item scale, the three dimensions being responsiveness, compensation, and contact. Both of these scales have been subjected to reliability and validity tests and demonstrate good psychometric properties. As E-S-QUAL is a relatively new measure it has yet to be used extensively in on-line service quality research. However, Kim *et al.,* (2006) used it on-line clothing retailers. With the instrument, they were able to identify successfully the exact e-service dimensions on which on-line apparel retailers are failing and thus identify the key factors that contribute to customer dissatisfaction. Needless to say, this type of information is highly valuable to vendors.

5.0 Research Methodology

Having reviewed the relevant literature, the decision was taken to employ the E-S-QUAL questionnaire for the ROS study using a web-based on-line survey to be sent to all ROS users. The survey was divided into two sections. In Section one a varying number of questions were asked regarding specific dimensions of on-line service quality as identified by Parasuraman *et al.* (2005). These dimensions and the number of items used to represent them are outlined below in Table 2.

As part of the instrument design, ROS requested that a number of statements be added to the survey in order to acquire information on certain specific aspects of their service. An example of these is the statement that the ROS website: *"enables me to complete the filing of my tax returns quickly"*. In addition, a number of statements on the influence of each service quality dimension on citizens' trust beliefs were

included. For example, in relation to the dimension of website efficiency, citizen's were asked to agree or disagree with the statement *"The ease of use of a website increases my trust in the on-line vendor."* The purpose of these questions was to investigate which dimension of website service quality provides the strongest influence on citizens' trust in ROS. In total, section one of the survey contained 31 statements. Section two of the survey collected relevant demographic information. In order to run the survey, the Revenue Online Service emailed all citizens who file their tax returns on-line, telling them about the study and inviting them to complete the survey. The email contained a direct link that directed the citizen to the on-line questionnaire. When the survey was completed, approximately 7,000 responses had been received. These responses are now being analysed.

6.0   Conclusion

This paper has outlined an in-progress study that aims to improve the delivery of electronic government in Ireland. The findings will, it is hoped provide the Irish Revenue Online Service with useful insights into the key dimensions of service that are valued by Irish citizens who use their on-line service to file their various tax returns. It is expected that the research will provide evidence that Irish citizens' perception of ROS's quality is driven or inhibited by specific factors, all of which it is possible to manage. Secondly, it is expected to show the degree to which specific dimensions of service quality create, or in their absence undermine, citizen trust in the Revenue Online Service. Finally, it will provide an indication of the usefulness of the E-S-QUAL survey instrument for improving our understanding of the e-government services environment.

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