

A SURVEY OF CITIZENS' AWARENESS AND ADOPTION OF E-GOVERNMENT INITIATIVES, THE 'GOVERNMENT GATEWAY': A UNITED KINGDOM PERSPECTIVE

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Abstract

The purpose of this paper is to examine the citizens' awareness and adoption of e-government initiatives in the United Kingdom (UK), specifically the 'Government Gateway'. To fulfill this purpose, this research undertook an empirical examination of the awareness and adoption of the 'Government Gateway' amongst UK citizens. Demographic characteristics including, age, gender, education, income and occupation and two yes/no type questions were asked to provide insights of the adopters and non-adopters of e-government initiatives. The data on these variables was collected using a postal survey. A self-administered questionnaire was sent to 1600 households and a total number of 358 usable responses were received. The findings revealed that citizens with home broadband access are more likely to be aware of and adopt e-government services, in this case, the 'Government Gateway'. The study also found that as other similar ICTs such as computers, Internet and broadband, the demographic characteristics of citizens such as the age, gender, education, and social class have an imperative role in explaining the citizen's awareness and adoption of e-government services in the household. By undertaking such research, a substantial contribution is offered to various stakeholders including the government agencies who might want to differentiate between the adopters and non-adopters of e-Government services.

Keywords: Citizen, Government Gateway, Adoption, Awareness, United Kingdom, Demographics.

1 INTRODUCTION

The penetration of the Internet and opportunities involving Information and Communication Technologies (ICTs) have occurred at an escalating rate within the private sector. This has caused governments and public sector organisations around the globe to become aware of their potential and consequently utilize them; thereby triggering investments into e-services (Choudrie et al, 2004a). However, the e-services offered by governments are much more than simple automation. E-services are meant to dramatically improve all areas of government activities-from democratic participation using online voting to improving the efficiency of citizen interactions with the government by providing online government services (Barc and Cordella 2004).

Other countries around the globe are undertaking several various e-government measures. Similar to them, the United Kingdom (UK) government is also undertaking steps that ensure it is in accordance with other countries around the globe. For this purpose, the introduction and experiences of utilizing a number of government services that are offered electronically via the 'Government Gateway' in the UK is pertinent. These e-Government services include council tax bills and accounts, housing benefits,

child benefit claims, carer's allowance, jobs online, state pension forecasts, self assessment of tax and tax credits, landweb direct and the national blood services (Government Gateway, 2004). This is in contrast to the traditional way, whereby access to government services was undertaken by the citizens visiting 'physical, brick foundation' locations. Therefore this novel phenomenon offers a great amount of convenience and ease for the citizens' use (Government Gateway, 2004). However, it is not known whether the citizens of the UK are aware of the aforementioned services. Further, questions are still emerging upon whether the citizens are actually adopting the newly offered services. Therefore the initial aim of this paper is to *examine the citizens' awareness and adoption of e-government initiatives, specifically the 'Government Gateway' in the United Kingdom*. Since these services have been recently introduced an investigation is needed to study if the demographic characteristics and home Internet access are affecting the awareness and adoption of these services. Therefore the second aim of this paper is to *examine the affect of the citizens' demographic characteristics and home Internet access on the awareness and adoption of e-government services*. To fulfil the aforementioned aims, this study undertook an empirical examination of the awareness and adoption of the 'Government Gateway' amongst the UK citizens.

This research offers a substantial contribution to various stakeholders including the government agencies who could require a distinction to be drawn between the adopters and non-adopters of e-Government services. That is, from the results of this research the government agencies could better understand in a simpler and detailed manner, the problem of low adoption. This could allow the formulation of a strategy that promotes awareness and diffusion.

The paper begins with of a brief discussion of research undertaken on the citizens' adoption of e-Government services and a brief overview of the government gateway and its purpose in section 2. Section 3 provides a brief discussion of the utilized research method. The findings are then presented and discussed in Section 4. Finally, a conclusion to the research is provided in section 5.

2 BACKGROUND

2.1 The Definition and Benefits of e-Government Services

E-government is being defined in various ways, each differing according to the afforded purpose. In the instance of this research, the definition being applied is the one offered by the European Information Society. "*E--Government is the use of information and communication technology in public administrations combined with organizational change and new skills in order to improve public services, democratic processes and strengthen support to the public policies*" (European Information Society, 2004). According to the European Information Society (EIS) (2004) if appropriate e-government services are developed and delivered, then enormous benefits will be offered to all the stakeholders including the citizens, government and businesses. For example, a recent survey of the European Union countries was conducted and it was found that the most frequently cited benefit of obtaining e-government services for the citizens, or in this case, the users' are time savings and gaining flexibility. The service that provided the citizens' with greatest satisfaction was the ease of use offered by the centralized portals (EC Press Release, 2003). The survey study concluded that the crucial elements for the success of online government services are optimizing workflows, simplifying processes, and improving the way that information is re-used and shared amongst the public authorities (European Information Society, 2004).

The EIS emphasized that the correct implementation of e-government will result in shorter queues for citizens in government offices. Added benefits of the improved service include: (1) reductions in the costs for both businesses and governments by cutting the tax burden and boosting competitiveness; (2) with the help of e-government the public sector can be made more open and transparent, delivering governments that are more comprehensible and accountable to citizens, improving civic involvement in policy making and reinforcing democracy at every level across Europe; and (3) administrations can

be made more citizen-centered and inclusive; thereby, providing 24/7 personalized services to everyone, no matter what their circumstances or their special needs are (European Information Society, 2004). To realize the overall benefits in Europe, the European Commission established the e-Europe 2005 target. *e-Europe 2005* applied a number of measures to address simultaneously both the demand and supply sides of the equation. On the demand side, actions on e-government, e-health, e-learning and e-business are designed to foster the development of new services. Additionally in order to provide both better and cheaper services to citizens, public authorities can use their purchasing power to aggregate demand and provide a crucial pull for new networks. On the supply side, actions on broadband and security should advance the rollout of the infrastructure (e-Europe Action Plan Report 2002). The next section provides a brief review of the work focused upon the citizens' adoption of E-Government services in the UK.

2.2 Citizen adoption of e-government services

In the adoption pattern area, the topic of e-government is a new and emerging one. Due to this, research in this area has focused upon the supply side or government related issues such as strategies and policy (Beynon-Davies 2004; Choudrie et al, 2004b; Williams and Beynon-Davies, 2004; Chadwick and May, 2003), challenges (Barca and Cordella, 2004; Weerakkody et al, 2004); technical issues (Cottam et al, 2004; George, 2004), evaluation of the usability of e-government Websites (Choudrie et al, 2004; Mosse and Whitley, 2004); however, little attention has been given to the demand or citizen's perspective. Recent studies that addressed the citizen adoption of e-government services suggest that trust and security (Otto, 2003) and transparency (Marche and McNiven, 2003) are the major issues for e-government adoption.

Gefen et al (2002) studied the adoption of online government services employing data collected from the undergraduate students of three Universities. Findings of this study suggest that trust, social influence, and website ease-of-use impact perceived usefulness of the interface, which, combined with social influence, predict the intended use of e-Government. Carter and Belanger (2004a) integrated constructs from the Davis (1989) technology acceptance model (TAM), the Rogers (1995) diffusion of innovation theory (DOI), and Web trust (McKnight et al, 2002) research. Findings of this study suggest that the compatibility of relative advantage and perceived usefulness are constructs that are important in explaining the citizens' perception of e-Government adoption (Carter and Belanger, 2004a). Carter and Belanger's (2004b) study used Moore and Benbasat's (1991) perceived characteristics of the innovations' constructs to identify factors that influence the citizen adoption of e-Government initiatives. Findings from this study reveal that relative advantage, and image and compatibility are the important constructs when predicting intentions to use the state e-government services (Carter and Belanger 2004a).

The aforementioned studies were initial attempts to examine factors such as trust, transparency, compatibility and relative advantage, which affect the adoption of e-government services by the citizens of the United States of America (USA). Literature analysis suggests that such studies have not yet been undertaken to investigate the adoption behaviour of the UK citizen. This is because e-government related development is new and recent to the UK. A report on benchmarking e-government in the Europe and the USA found that 'existing studies of e-government concentrate on the supply-side by focusing on the availability and level of sophistication of online services and usage' (RAND EUROPE, 2003). The findings from this study reveal that the citizens are reluctant to utilize e-government services that require personal information. These findings also suggest that 'among respondents who indicated a preference for online government services, citizens were not always aware of which government services were available online' (RAND EUROPE, 2003). This report covered only a few aspects of the demand-side of e-government and recommended that 'future research is essential to get a more complete picture of the perceptions and attitudes of the users of e-government services (RAND EUROPE, 2003). Therefore, bearing the above reasons in mind the aim of this research became to survey the state of awareness and adoption of the recently introduced e-

government initiatives 'government gateway' that offers a centralized registration for all e-government services available in the UK. The following subsection provides a brief discussion about the government gateway and the process that can be utilised to register on it.

2.3 The Development of e-Government Services in the United Kingdom: Government Gateway

Governments around the globe are developing and implementing e-government initiatives with the UK government being no exception. A centralised e-service initiative that is of current interest and has been developed by the UK government is the 'Government Gateway'. This centralised portal enables citizens of the UK to access any of the online e-Government services (Government Gateway, 2004). The UK government has made available a number of services that can be accessed by the citizens electronically via the common 'Government Gateway'. These e-Government services range from paying the council tax to agricultural and rural development issues (Government Gateway, 2004). Some of the important e-Government services that are currently available include: (i) the citizens of the Borough Council of King's Lynn and West Norfolk can view their council Tax bills and accounts, and submit direct debit applications in order to pay a council tax. Additionally individuals can query the amount of entitled housing benefit and /or council tax benefits and submit various changes of circumstances; (ii) farmers from Northern Ireland can submit online the Sheep Annual Premium Scheme Application (SAPS); (iii) services related to the Department for Environment, Food and Rural Affairs (DEFRA) can be conducted online; (iv) services from the Department for Work and Pensions (DWP) such as a child benefit claims, carer's allowance, online jobs, and state pension forecasts are available online; (v) Inland revenue services such as self assessment of tax and tax credits; (vi) Landweb direct service for Northern Ireland's professionals dealing in the land and property business; and (vii) the national blood services are currently accessible online in the UK. Contrasting this to the traditional way whereby access to government services required citizens visit different web addresses, the common 'government gateway' offers a means to the various e-government services using a centralised path. Therefore this gateway offers a great amount of convenience and ease for the e-citizens use (Government Gateway).

The Government Gateway registration and enrolment process involves undertaking the following steps: (1) Select to register as an Individual, Organisation or Agent; (2) Determine whether to receive a User ID or use a digital certificate; (3) Enrol for government service(s); (4) Receiving of activation PIN for each enrolled service through the post; and (5) Activation of the service. After completing the registration process, a single User ID or digital certificate is allocated to the applicant and it can be used for all the Government Gateway services. Employing the allocated ID and PIN, transactions can be made using the appropriate Government websites, portals or third party software packages. As explained above the process of registration and enrolment is simple and straightforward for users. However, as yet the awareness of and registration to the centralised service amongst the citizens is not yet known. This paper is an initial attempt to provide empirical evidence on the awareness and adoption of the Government Gateway by the Citizens of the UK. The following section discusses the methodology adopted to examine the awareness and adoption of the Government Gateway by the Citizens.

3 RESEARCH METHODOLOGY

Empirical research via a survey research method is considered to be an appropriate approach to examine the citizens' awareness and adoption of Government Gateway adopters (Choudrie and Dwivedi, 2005a). Nationwide data on the awareness and adoption of the Government Gateway was collected from the citizens' of the UK. Since a reliable sample frame (the electoral register) was not easily available for the whole of London or the UK population, it was decided to utilize an alternative tool (People Finder) to prepare the sample for the survey. The structure of the sample frame (People Finder) necessitated the adoption of a stratified random sampling approach to collect unbiased data

from the target population. Within the People Finder database, the entire UK population was listed alphabetically according to the surname or family name. The first step was to extract a respondent address from each letter of the alphabet. Then the sample size for each alphabet was determined according to the total sample size. Thereafter a unique random number for each alphabetical letter was generated using a research randomizer software. Respondents to the corresponding random numbers were then selected for data collection from the sample frame (People Finder).

In order to collect random data from the target population, a self-administered questionnaire was considered to be the most appropriate primary survey instrument in this investigation. This was because it addressed the issue of reliability of information by reducing and eliminating differences in the way that the questions were asked (Cornford and Smithson, 1996) and facilitated the collection of data within a short period of time from the majority of respondents (Hall and Hall, 1996).

Overall, the questionnaire used in this research contained 13 questions. These questions were divided into two categories: (1) multiple choice questions addressing the social attributes (demographic variables) including age, gender, education, and income; and (2) Yes/No questions that asked whether the respondents were aware of the Government Gateway and if they had registered when accessing it. Close-ended multiple-choice questions were included in the questionnaire in order to obtain a high response rate. This was attributed to instances where respondents preferred to answer close-ended questions within the non-interactive, self-administered questionnaires (Fowler, 2002).

Prior to dissemination of the final questionnaire, a pilot study was conducted in order to: determine the response rate and learn of any discrepancies within the questions, which included determining whether the format of the questionnaire and questions were suitable. Additionally, the duration that completion of the questionnaire would require was also established. The pilot questionnaire was delivered using postal mail to a total of randomly selected 200 participants from People Finder in December 2004. A total of 40 replies were obtained from the respondents within the specified duration. The majority of the respondents reported that the questionnaire was easily understood and required 10 to 15 minutes to complete. The majority of the respondents validated the content of the questionnaires, although minor changes based upon the responses were undertaken to the final design of the questionnaire and a final questionnaire was developed. Since there were no major changes required to incorporate in questionnaire, responses received from the pilot study were also included in the final analysis (Fowler, 2002).

Fowler (2002) has suggested that a prerequisite for determining a sample size should be an analysis plan. This research is a part of a larger study on broadband diffusion in the UK household. Analysis of the entire study required performing principal component analysis (PCA), regression analysis, t-test and chi-square test. It has been suggested that in order to perform the aforementioned statistical analysis with rigour, the sample size should be above 300 (Stevens, 1996). Therefore, keeping the statistical analysis plan in mind it was decided that the total sample size should be large enough to obtain a minimum of 300 responses. Therefore the total sample size was determined by using pilot response rate as basis of final survey.

Total sample size= [Total responses required*100] / Pilot response rate

Total sample size= 300*100/20= 1500

As illustrated above a sample size of 1500 was required in order to achieve 300 responses. To compensate for any shortfalls in 300 responses that may occur due to undelivered and partially completed responses, the sample size was further increased from 1500 to 1600. Therefore, a total sample size of 1600 was considered imperative for this study. The final questionnaires were sent using the postal service. A covering letter and a self-addressed prepaid return envelope were administered to a total of 1600 household consumers in the UK in the periods between Jan 2005 and March 2005.

Of a total of 1600 sent questionnaires, 300 questionnaires replies were received within the specified periods. Of these, 280 questionnaires were used and 20 were both undelivered and incomplete questionnaires. This implied that a response rate of 17.5 percent was obtained. To test the response

bias 200 questionnaires were sent to randomly selected non-respondents from the original sample in the middle of March 2005. 40 questionnaire replies were received from the aforementioned sample. Of these 38 replies were utilised and there were 2 partially completed questionnaires. Fowler (2002) suggested that 'if the new round of data collection replicates questions in the initial survey, the results can be added to the initial sample data set'. Table 1 illustrates that there were no significant differences in terms of age, gender, education, Internet access at home, type of Internet access and Government Gateway Adoption between the original respondents and a sample of non-respondents. Therefore, following Fowler's (2002) suggestion responses received from the pilot study and from the non-respondents were added to the original response rate. After combining the original response of 280, responses from the non-response bias that is 38 and the pilot responses that are 40, a final response rate was estimated (Fowler, 2002). The obtained final response rate was 19.9 percent.

$$\text{Response Rate} = (318 + 40) / (1600 + 200) = 19.9 \%$$

3.1 Non-response Bias Test

To test if the characteristics of the respondents from the original responses are similar to the non-respondents, the chi-square (χ^2) test was conducted for the demographic variables (i.e. age gender and education) (Fowler, 2002), Internet access at home, type of Internet connection at home and government gateway adoption. The findings are illustrated in Table 1. The Chi-square value is not significant for all six variables (Table 1). This suggests that those non-respondents who returned the completed questionnaire after reminders were similar to the respondents from the original responses. Hence this suggests that with the provided sample there was a minimal chance of a response bias in this survey finding.

Variables	χ^2 Value	df	Significance
Age X Response Type	6.904	5	.228
Gender X Response Type	.312	1	.577
Education X Response Type	5.43	4	.246
Internet Access X Response Type	.419	1	.518
Type of Internet Connection X Response Type	2.583	1	.108
Gov. Gateway Adoption X Response Type	1.67	1	.196

Table 1. Test of significance for nonresponse bias

The collated data was analyzed using SPSS version 11.5. This allowed the calculation of the response frequencies and percentages to analyze the variables determined by this research. The reasoning for using the aforementioned statistics was due to previous Information Systems (IS) researchers employing the earlier stated analysis tools to analyze and present research findings using response frequencies, percentage (Webster, 1998), means and standard deviations (Venkatesh and Brown, 2001).

4 FINDINGS AND DISCUSSIONS

4.1 Respondents Profile

A profile of the survey respondents is presented in Table 2. Of the 358 responses, 26.1 percent of the respondents belonged to the 25-34 years age group, which formed the largest response category. This is followed by the 35-44 years age group with 21.6 percent. The least responsive category was the 65 years and above with 3.9 percent (Table 2). In terms of gender only there was a slight difference between the two genders. Males were 50.6 percent compared to the female 48.6 percent population (Table 2).

The majority of the respondents possessed educational qualifications—a degree (33 percent) and postgraduate level education (27.9 percent). The least responsive educational category was the GNVQ/Diploma with 8.4 percent response. 11.5 percent of the respondents possessed GCSE level education followed by 'A' level with 14.8 percent response (Table 2).

The occupational category with the highest amount of respondents was the 'E' one that consisted of students, casual workers, and pensioners (35.8 percent); followed by category 'B' which consisted of managers, teachers, and computer programmers (27.4 percent). C1 represented the third largest occupational category with 19.0 percent responses followed by category 'A' with 10.6 percent response. The least responsive occupational categories were 'D' and 'C2' with response rate of 1.7 percent and 2.0 percent respectively (Table 2).

Responses for the household income categories varied between a 17.3 percent response for £20-29 K and 7.0 percent for the £50-59K category. The least annual household income group (<=£10K) was represented by a 9.2 percent response rate, whilst the largest income group (=>£70K) was represented by a 10.1 percent response rate (Table 2).

Of the 358 responses, 308 (86 percent) respondents had Internet access at home either using narrowband or broadband and 50 (14 percent) stated that they did not to have any means of Internet access at home. Of the 308 respondents who accessed Internet at home, 207 (57.8 percent) represented the adopters of broadband and 101 (28.2 percent) the non-adopters (i.e. narrowband users) (Table 2).

Variable Category	Percent	Variable Category	Percent
Age (N=357)		Occupation (N=345)	
<=24	21.0	A	10.6
25-34	26.1	B	27.4
35-44	21.6	C1	19.0
45-54	19.0	C2	2.0
55-64	8.4	D	1.7
>=65	3.9	E	35.8
Gender (N=355)		Annual Income (N=347)	
Male	50.6	<=10 K	9.2
Female	48.6	10-19 K	16.8
Education (N=341)		20-29 K	17.3
GCSC	11.2	30-39 K	16.8
GNQV	8.4	40-49 K	10.6
A Level	14.8	50-59 K	7.0
Degree	33.0	60-69 K	9.2
PG	27.9	=>70 K	10.1
Internet Access at Home (N=358)		Type of connection at Home (N=308)	
Yes	86.0	Narrowband	28.2
No	14.0	Broadband	57.8

Table 2. Profile of survey participants

4.2 Citizens Awareness and adoption of Government Gateway

Since the focus of this research is upon the awareness and adoption of e-government services, the next step to this research involved categorizing the percentage of the citizens into: (i) those who registered to the government gateway; (ii) those who are aware of, but not registered; and (iii) those who are not even aware of the government gateway. Figure 1 illustrates these findings. The results indicate that only 6% respondents of this sample had registered. Of the remaining 94% respondents, 18% stated that they had not yet registered and the remaining 78% were not even aware of the 'government gateway' (Figure 1).

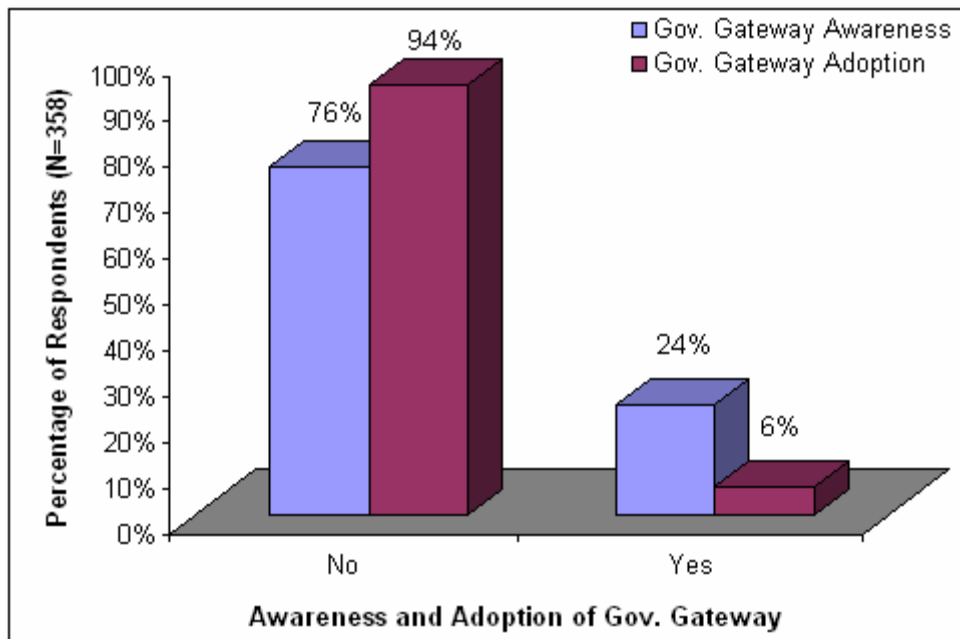


Figure 1. Awareness and Adoption of government gateway

4.3 Respondents Age and Awareness and Adoption of Government Gateway

It was found that as increases in the citizens' age ranges occurred, there was more awareness of and adoption of the Government gateway (Figure 2). An interesting obtained result was that the adoption rate declines considerably after 54 years and there were no respondents reported at the 64 years and above category. The majority of the adopters were between the age ranges of 25 and 54 years. The findings illustrated in Figure 2 also suggest that although the younger citizens are aware of the Government gateway, they are reluctant to register. Contrastingly, the older age group consisted of more respondents who were not aware of the government gateway. This may be because this age group consists of mostly non-computer users who do not possess the skills and knowledge necessary in order to use the computer and Internet.

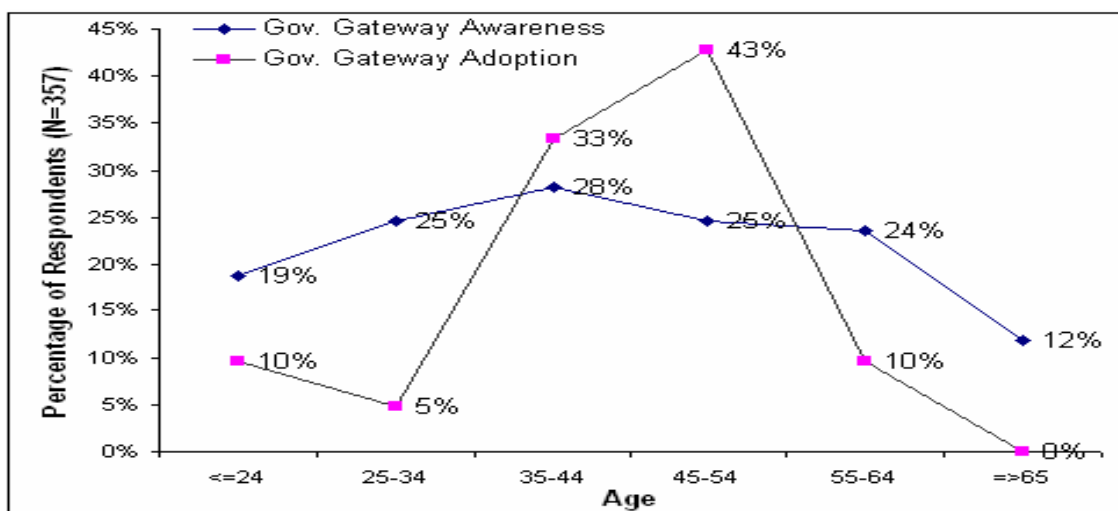


Figure 2. Age and awareness and adoption of Government Gateway (N=357)

4.4 Respondents Gender and Awareness and Adoption of Government Gateway

In terms of gender differences, Figure 3 illustrates that in terms of both awareness and adoption there are more males in comparison to females. This suggests that at initial stage of implementation of the e-government services males are more bound to drive adoption.

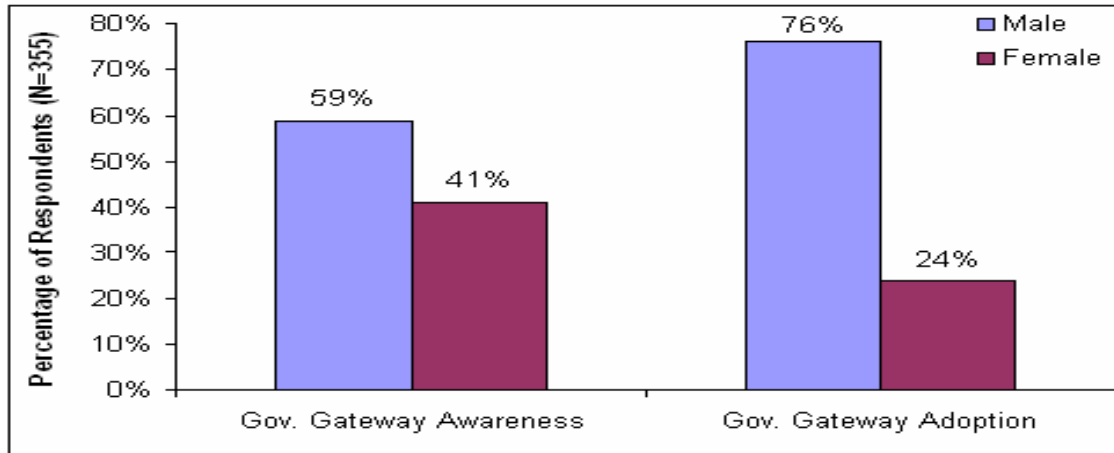


Figure 3. Gender differences on awareness and adoption of government gateway (N=355)

4.5 Respondents Education and Awareness and Adoption of Government Gateway

Figure 4 offers an explanation of the educational attainment of the survey respondents. The findings suggest that the majority of adopters are educated to the postgraduate and degree levels. Although, a small number of the adopters possess an education qualification below degree level, awareness does exist across all the segments of educational attainment. Hence, it is clearly apparent from the findings that education is an important demographic factor that will affect the growth and diffusion of future e-government services.

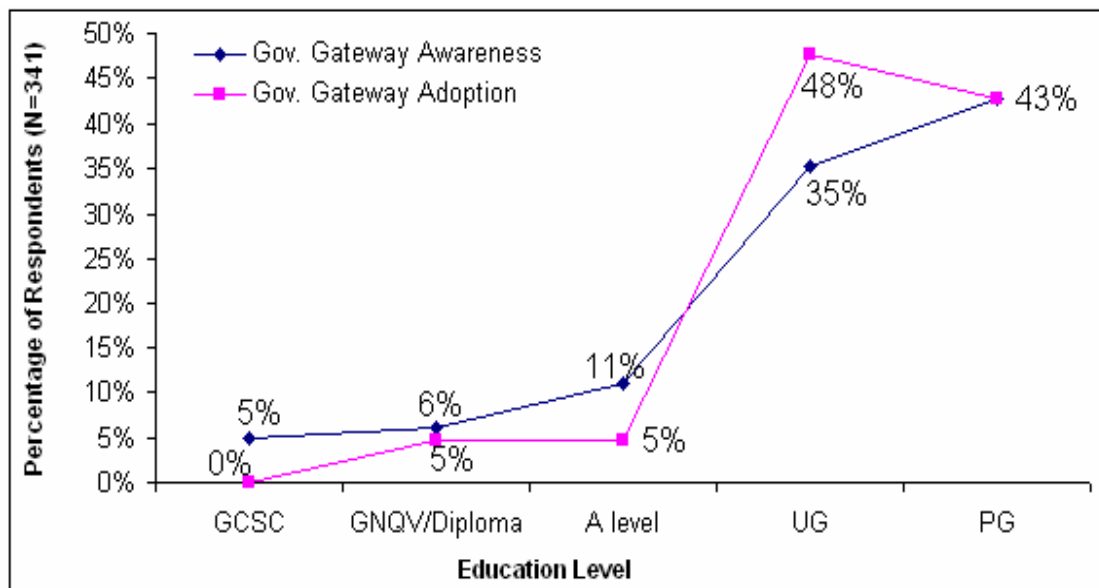


Figure 4. Educational differences on awareness and adoption of government gateway (N=341)

4.6 Respondent Social Class and Awareness and Adoption of Government Gateway

The social classes were derived using the occupation listed responses. Mainstream professionals such as, doctors, lawyers, and judges with the responsibility of more than 25 staff belonged to social class 'A'. The occupations that had a responsibility of less than 25 staff were classified as category social class 'B' and included academics. Skilled-non-manual workers fell within social class 'C1' and 'C2'. The unskilled manual workers belonged to social class 'D'. Finally, social class 'E' consisted of the pensioners, casual workers, un-employed individuals and students (Rice 1997, p. 241).

Figure 5 illustrates the occupational category or social class of respondents who are aware of and registered for the government gateway. This suggests that no respondents from social class 'C2' and 'D' provided responses. The findings suggest that the prevalent number of respondents who are aware of the government gateway belonged to social class 'E' which was then followed by class 'B'. Contrastingly, the prime number of adopters who registered at the common gateway belonged to social class B, followed by social class 'A'. In general terms, it is suggested that the awareness and adoption of e-government services decreases as the social class of respondents reduces. This finding is inline with a recent study suggesting that the broadband adopters emanate from a higher rather than a lower social class (Choudrie and Dwivedi, 2004, 2005b).

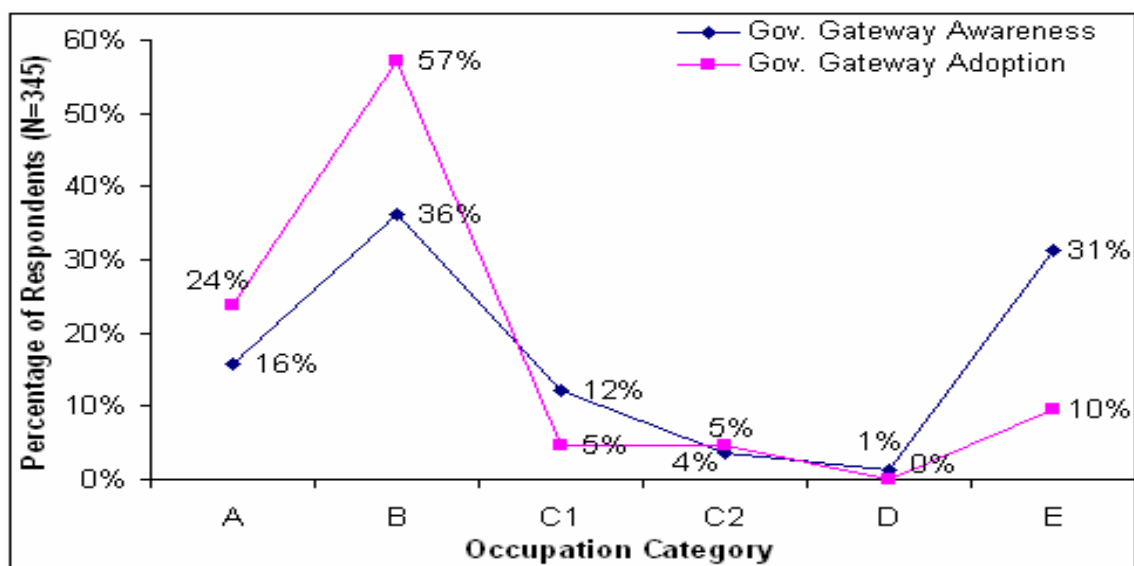


Figure 5. Occupational differences on awareness and adoption of government gateway (N=345)

4.7 Respondents Income and Awareness and Adoption of Government Gateway

Figure 6 illustrates that although almost all the income segments are aware of the government gateway, the adopters belonged mainly to the higher income group. For instance, 7% respondents from the income group £10-19 K were aware of the service. However, none of the respondents had registered at the government gateway. Generally, the higher the income of respondents the more probable it was that the e-government services would be adopted.

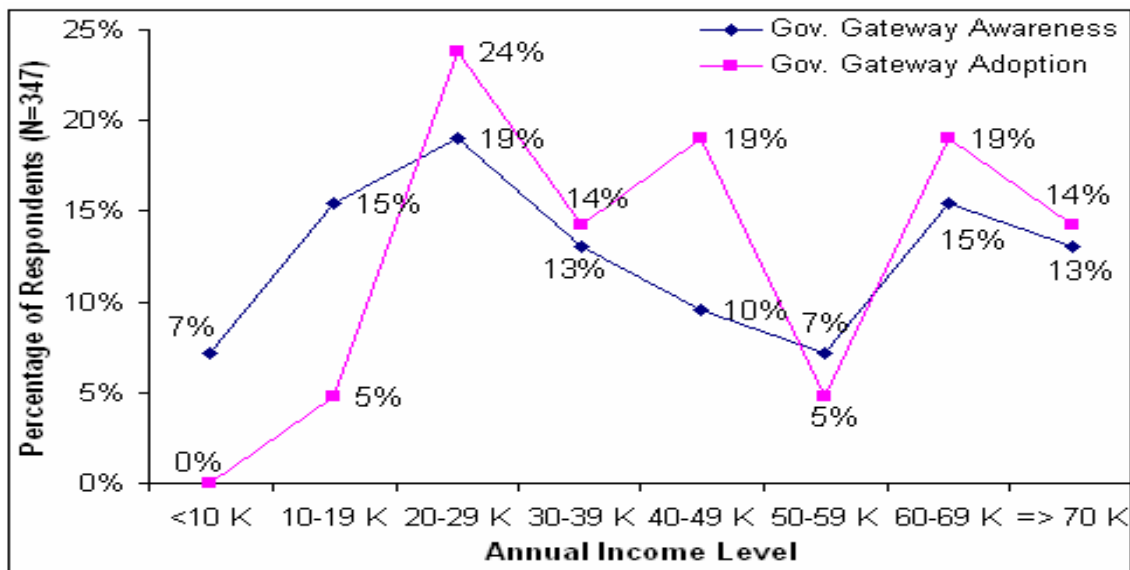


Figure 6. Income differences on awareness and adoption of government gateway

4.8 Broadband Access and Awareness and Adoption of Government Gateway

Figure 7 illustrates the clear differences amongst those who do or do not have access to broadband at home. Respondents with broadband access at home had both higher awareness and adoption rates than those who do not. This result suggests that the diffusion and adoption of broadband at home will directly affect the adoption and diffusion of new electronic services such as, e-government services.

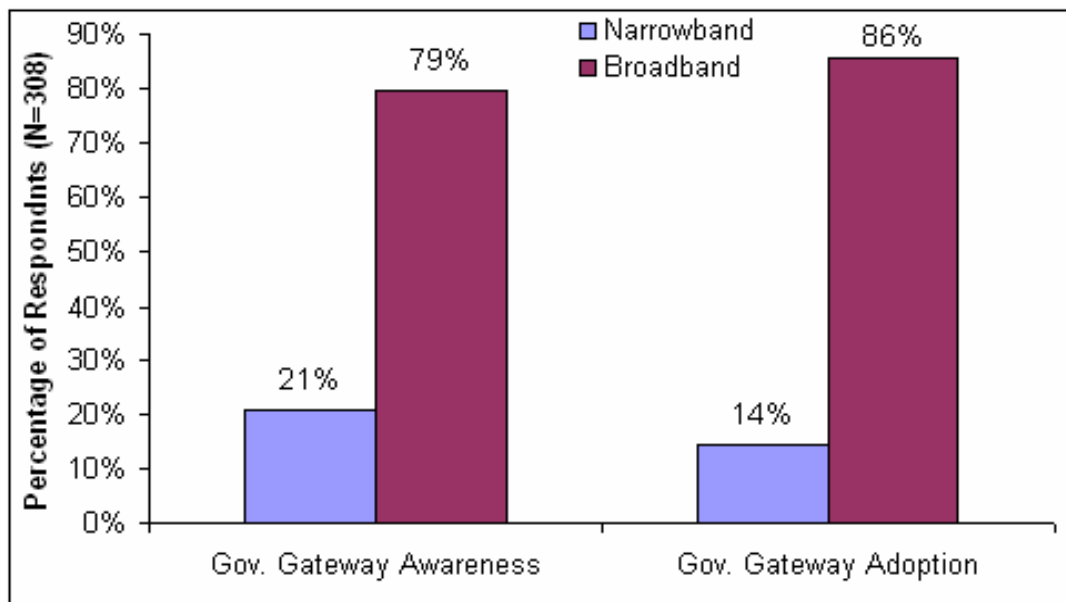


Figure 7. Effect of broadband adoption on government gateway adoption (N=308)

5 CONCLUSION

The aim of this research was to examine the citizens' awareness and adoption of e-government initiatives, specifically the 'Government Gateway' in the UK. To fulfill this aim, an initial and exploratory study was undertaken utilizing the government gateway, a centralized registration facility of all available e-government services. Also examined within this paper was the role of demographic variables and home Internet access in the awareness and adoption of e-government services. The study found that as other similar ICTs such as computers, Internet and broadband, the demographic characteristics of citizens such as age, gender, education, and social class have an imperative role in explaining the citizen's awareness and adoption of e-government services in the household. This study also concluded that citizens with home Internet access are more likely to be aware of, and adopt e-government services; in this case, the 'government gateway'.

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