

Making Progress Towards User-Orientation in Online Public Service Provision in Europe

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Abstract: This paper presents a conceptual approach for analysing, and improving, user orientation of online public services, focusing on eHealth services provided to the end user. It includes a discussion of some first results from a European 10-country population survey through which primary data about the behaviour, attitudes and needs of users and, essentially, non-users of online public services has been collected. The analysis points out areas which need attention by policy-makers and service providers in order to better take into account user aspects in the design and provision of Internet-based public services.

1. Introduction

While research on users of online public services (i.e. eGovernment, eHealth and eLearning applications directed at end users and delivered via the Internet) has recently provided extensive evidence of positive perceived impacts and good rates of satisfaction with performance [1], there remains to be limited understanding of the reasons for non-usage. A recent report by the European Commission on eInclusion points out that "the issue of providing suitable digital content for [...] 'underserved' people and communities is little researched and calls for more attention by policy makers and other stakeholders" [4]. The discussion around online public services has also put much stress recently on the high diversity of user needs and preferences. The reasons for citizens not to use these are various and often complex. In addition, there is also some evidence that online public services are not used to their full potential. The issue of underused online services then is equally relevant a phenomenon, and it is regularly traced back to user orientation in a wider sense. Without a better grip on the diversity of user groups and their circumstances, attitudes and capabilities with regard to using the Internet and public services in general, eGovernment, eLearning and eHealth services directed towards end users will fail to reach their targets.

This paper reports from ongoing work in eUSER, a project funded by the European Commission's IST programme, which intends to shed more light on the key factors that need to be addressed in order to increase user orientation of online services in three of the core area of European Information Society policy (e.g. eEurope 2005 Action Plan, [3]): government, health and lifelong learning. The paper presents one of the key approaches towards user orientation that is applied in the project, and includes discussion of some key results from the general population survey, conducted in order to collect data about the behaviour, attitudes and needs of users and, essentially, non-users of (online) public services. Due to length limitations, only survey results related to eHealth are discussed.

2. User Orientation of Online Public Services

The eUSER concept of user orientation is informed by previous research into relevant aspects of service provision. However, for eServices, a distinction between two main components of service user requirements - the service (content) component and the technology component - was required. The latter is relevant because citizens need to be able and willing to access and apply online technology applications. Usability, in the narrow sense of the term (see below) is only one aspect of this. Thus optimising usability alone, although certainly a worthy priority, will not necessarily mean that take-up rates of online public services will increase significantly. Moreover, when assessing users' satisfaction one needs to be aware of the fact that the levels of satisfaction are heavily influenced by their expectations. Given that the understanding of the determinants of perceived service quality has been developed for service delivery through traditional channels that were delivered by and large with very little ICT mediation, inferences from this research need to be adapted before being applied to online services.

The literature on user satisfaction lists a large number of quality determinants. Most of these are derived from qualitative, field research, using focus groups or more structured methods [8]. Thus, based on this, it was possible to compile 18 factors identified empirically: Access, Aesthetics, Attentiveness/helpfulness, Availability, Care, Cleanliness/tidiness, Comfort, Commitment, Communication, Competence, Flexibility, Friendliness, Functionality, Integrity, Reliability, Responsiveness and Security. Parasuraman [12] who developed the influential SERVQUAL methodology of measuring customer perceptions of service quality, presented a set of five quality dimensions which has found wide application. These are: Tangible factors, Reliability, Responsiveness, Assurance and Empathy.

As indicated above, when assessing user satisfaction one needs to be aware of the fact that satisfaction is heavily influenced by expectations [11]. Indeed, research on service quality started out in the early 1980s by suggesting that perceptions of service quality stem from a comparison of what customers feel a provider should offer (expectations) with the way the service has actually performed [8][10].

As suggested above, the understanding of determinants of perceived service quality has been developed for service delivery through traditional channels, mostly "people-delivered services" [19]. Hence for services that are transmitted via technological systems such as the Internet, we need to distinguish between two main components in user requirements: the service (content) component and the technology component. The latter is relevant because citizens need to be able and willing to access and apply online computer technology for using online services.

User acceptance of technology has been researched against a number of theoretical perspectives, most notably Innovation Diffusion Theory [14] which tries to identify the perceived characteristics of a technological system influencing its adoption by users, and the Theory of Reasoned Action [7] which explores how user beliefs and attitudes are related to individual intentions, e.g. to use a technological system. Based on the Theory of Reasoned Action, the Technology Acceptance Model [6] has become established, seeking to explain the adoption of technology, from the perspective of an individual. A distinction between perceived usefulness ("the degree to which a person believes that using a particular system would enhance his or her [...] performance", i.e. utility) and perceived ease of use ("the degree to which a person believes that using a particular system would be free of effort"). The model has been confirmed in general by a large number of replication studies (see [19]:15 for an overview), which explains its big popularity among researchers.

On the basis of this theoretical and empirical research, the following elements of user orientation for online public services can be distinguished:

Visibility/findability, denoting the degree to which the service is known to potential users, meaning awareness about the service in the target population. Visibility can be influenced/managed by providers through publicity strategies. Services are, however, also to a certain extent visible even if no promotion has taken place. Awareness might result from unintentionally coming across a service, e.g. while surfing on the Internet. This relates to the definition of findability used in the context of website promotion strategies, which can be structured to a variable degree.

Utility (usefulness) refers to the utility of the service from the viewpoint of the individual (actual or potential) end user. Utility might be derived from the relevance of the service to meet particular needs of the user (i.e. in the case of many health services) and the suitability for personal circumstances. It also comprises the variety of tangible aspects, such as time savings, cost savings and so on resulting from the service itself (rather than the way it is delivered – see service quality below).

Access/availability: The degree to which the distribution channels and technologies employed allow all types of potential users access to the service in question. Access is a function of: (a) Findability in the narrow sense - the ease with which the service can be located intentionally; (b) Affordability - the degree to which the public can afford the cost to access and use the services in question; (c) Time independence - the extent to which the service is accessible at any time when demand occurs; (d) Location independence - the extent to which the service is accessible from any fixed or mobile location; (e) Platform independence - the extent to which the service is accessible through various alternative systems (hardware and software); (f) Accessibility - suitability for persons with disabilities; and (g) Appropriateness (which could also be a subset of accessibility) of services for persons belonging to minority groups, such as immigrants.

Service quality encompasses the ability of the service to fulfil the expectations of the user (i.e. lead to satisfaction with the service) with regard to a large number of attributes, as first conceptualised by the SERVQUAL school of researchers [19]. Adaptation for the subject of online public services, the following factors are the main determinants of service quality:

(a) Content quality, effectively conformance to legislation and professional quality (correctness/validity, comprehensiveness, reliability, and accuracy). Note that content quality is something that usually cannot be fully assessed directly by users, since they lack the professional knowledge for this. From user's viewpoint there is, therefore, a demand for signifiers that convey the messages regarding the quality of the content.

(b) Flexibility involves choice of ways in which the service is used and delivered, and choice of content (the width and broadness of the service offer).

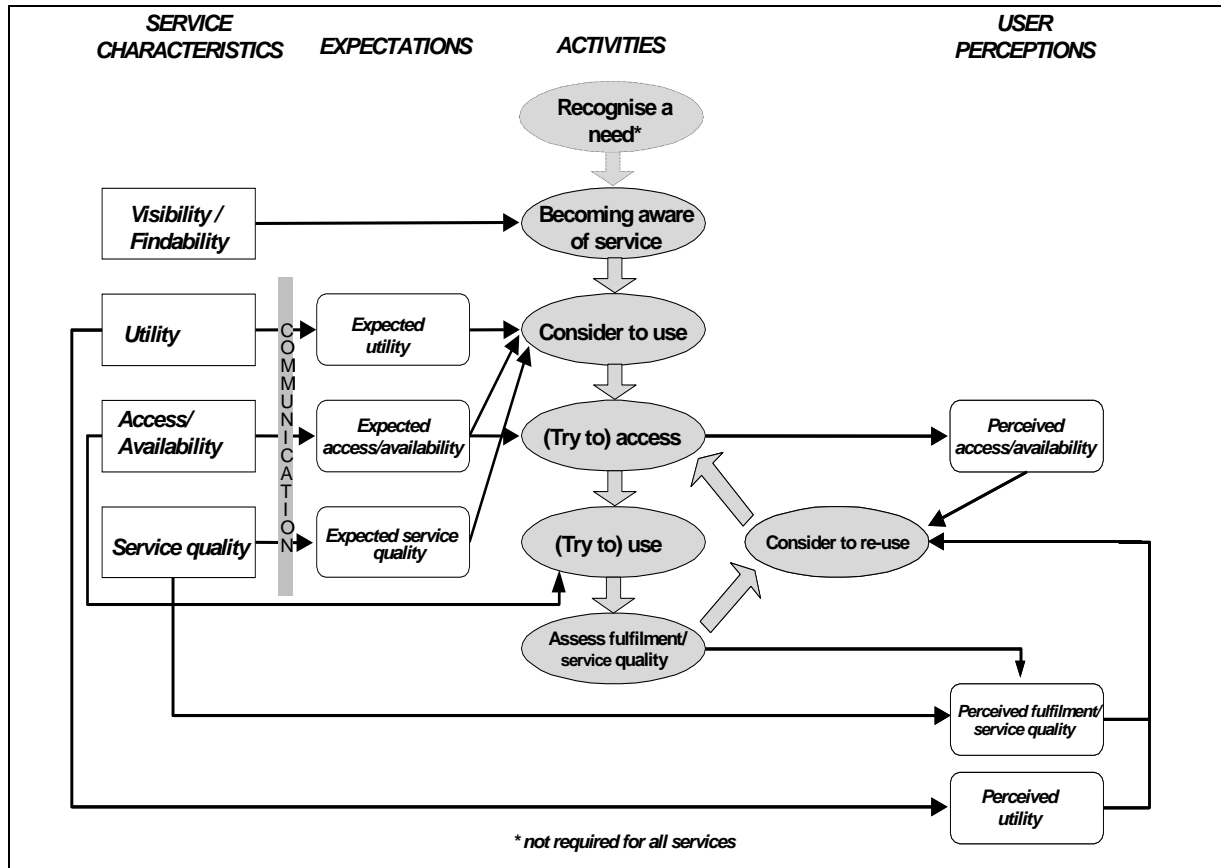
(c) Usability (ease of use) means the capability of all supported paths towards task accomplishment, to "maximally fit" individual users' needs and requirements in the particular context and situation of use [15]. This includes elements of efficiency (i.e. simplicity of use, proper internal structures, and an appropriate minimum of information to be input by the user), learnability and memorability. Website-based services with a high usability contain functions that help the user find what they look for without difficulty, and allow them to navigate easily - manoeuvre quickly back and forth between pages and functions. Error handling, that is responsiveness in the case of technical problems (ability to get fast assistance if there is a problem or question) and system reliability (correct technical functioning of the technical equipment and related support services) are also important.

(d) Assurance/trust refers to the degree to which the service in question (and the ways it is provided) instils trust and confidence. It stems from the reputation of the site (provider) and the services it offers as well as from the way in which the information is presented. There is a close relation to what above has been defined as the professional quality of services: since end users cannot always assess quality directly, they want assurance that the

content is of a certain quality. Another aspect of trust concerns protection from security threats and respect of user privacy.

(e) Customisation/personalisation is how much and how easily the service can be tailored/adapted to individual users' preferences and needs.

Figure 1. eUSER Conceptualisation of user orientation



The model in Figure 1 puts the main elements of user orientation, as discussed above, in relation to the process of uptake of a given service by a potential user. The model can be used to devise strategies for increasing service take-up, targeted at specific target groups. It distinguishes between “real” service characteristics, expectations regarding service characteristics (which are the result of the communication of “real” service characteristics through marketing, social networks etc.), the activities of (potential) users of public services, and the perceptions which result from these activities. Note that the figure does not differentiate between delivery/transaction channels (online vs. offline). It also tends to suggest that there is a logical progression from recognising a need via trying to access a service to using the service. Of course, at each of the steps during the process individuals might decide not to (try to) use the service if they feel that expected returns do not compare well with efforts/costs. Nevertheless, it is maintained that the model can be used to devise strategies for increasing service take-up, targeted at specific groups.

3. Online public services: The example of eHealth end-user services

For the purpose of this paper, public services are defined as front-office services of public interest, provided by the State or by private suppliers. In the health area, the main focus is on services delivered directly to end-users, using online applications, either entirely or at least in a significant part. The relevant issues relate to the improvements that can be achieved in comparison to ‘traditional’ delivery channels. These improvements can be

twofold –first, they can relate to the efficiency of service provision. Thus, eHealth can provide a new impetus to address the ongoing challenge of maintaining/raising the quality of healthcare services and improving public health in general. Furthermore, improvements can aim to widen the reach and reach-ability of these services by actively incorporating relevant needs of all potential users as an integral part of the whole delivery process.

Table 1. Results from surveys of eHealth activity in EU 15 Member States

Source	Indicator	Population / Base	EU 15 in % of Internet users	EU 15 in % of Population
SIBIS GPS (Apr-May 2002)	Usage of internet (for private purposes) to search for health-related information – last 12 months	Europeans aged 15+; Internet users are those who used Internet in last 12 months	36.4	19.8
Flash Eurobarometer 112 (Nov 2001)	Usage of internet (for private use) to seek health-related advice or information (no reference to time / Ref. period)	Europeans aged 15+; Internet users are those who personally use the Internet	33.2	15.9
Eurobarometer 53.0 (Apr-May 2000)	Usage of the Internet at home to search for information which concerns one's health - last three months	Europeans aged 15+; Internet users are those with an internet connection at home who use the connection	23.0	4.4

The importance of eHealth services, applications, and resources arises out of few relevant sets of issues, that are traced back to the public health policy, both in terms of financing and sustaining national health systems and in terms of positively influencing health status of a society as a whole (i.e. the health of the general public). Thus, in terms of the latter, it was postulated that wide(r) health information diffusion would facilitate better and even proactive health management on the part of the general public. In terms of the former, there are expectations that the eService would limit demands on existing health care services and facilitate more efficient use of resources in the health sector. The financial considerations also come into play in relation to a more specific eHealth application such as telecare and support of independent living [13]. All of the above then can be related to the desired outcomes - improvement of health outcomes, improvements in medical outcomes, and maintenance of a relatively high level of quality of life. However, the question imposes itself - are the eHealth resources sufficiently user oriented for this potential to be realised and what improvements can be made to facilitate the general public?

4. The current situation in the eHealth services domain

The usage of the Internet for health-related activity has been increasing over the last few years both as a percentage of Internet users and, more quickly, as a percentage of the population (because Internet usage is growing as well). Thus already in 2002, more than one in five of the adult population in the old EU have used the Internet to search for health-related information/advice ([16], Table 1). Online searching for health information is thus of growing importance within the repertoire of health-related activities of the European public.

However, there is some evidence that the growth of online health related activities has also faced some constraints. Thus the more recent empirical evidence regarding the propensity of Internet users to search online for health-related information has pointed towards a wide variation across Europe, both at the national and regional level [18]. Crucially, this variation in the propensity to search for health-related information by Internet users, while as might have been expected, was strongly associated with the level of

Internet penetration in general, also deviated from this overall trend in a number of European regions. One of the reasons for this deviation could be the availability of attractive online health services, and the way they have been structured, that is to say, their user orientation in a broad sense.

While acknowledging that the Internet may not always be the most effective resource for all people and at all times, some empirical evidence has already pointed towards some potentially worrisome developments. Thus in Europe, those who potentially and in principle might need it most are using it least like older people and people in less favourable circumstances [5]. The evidence from the US here is quite similar in this regard to (e.g. [2]). The implication is that more should be done to mitigate problems and issues encountered by all uses and potential users which in turn seem to inhibit the utilisation of the internet as a relevant health resource.

One way of doing this is by restructuring Internet-based delivery – e.g. by catering for the diversity of users, for example by a more targeted delivery. The potential for this does seem to exist – thus on the demand side for example, whatever the purpose of the mass-media interaction, older people are particularly drawn to news and information content. Because of this almost innate hunger for information, the Internet is likely to be an increasingly attractive source of health information and services for older adults [17].

There are two sets of issues which seem particularly relevant. Firstly, looking for health information on the Internet such as information about specific medical matters appears to be highly attractive [18][2] – the implication is that significant numbers of people are now actively using the Internet to address specific medical matters. The corollary of this is an(other) inferred user need – to be provided with the health information sources on the Internet which are of good quality, and perhaps more importantly to effectively communicate this to the users and potential users. Results from the eUSER survey show that large majority of eHealth users express an appreciation of and inferring from this, a strong demand for quality-related website signifiers and features (see Table 2).

Table 2. Importance of quality features of health websites 2005 (share of all eHealth website users)

<i>How important is it for you when visiting a health site...</i>	<i>very important in %</i>
<i>... to know who the provider of the site is?</i>	54.6
<i>... to see it has a quality mark or seal of approval of some sort?</i>	54.0
<i>... that site looks professional?</i>	47.0
<i>... that site states that the privacy of visitors is protected?</i>	67.9
<i>... that medical terms are explained so one can understand?</i>	69.3

Date Source: eUSER General Population Survey, unweighted averages of DE,DK,FR,IE,IT,UK.

However, it appears that there remains a considerable scope for improving user orientation on the part of service providers. Thus non-insignificant number of eHealth users are still encountering problems associated with locating desired information and / or successfully navigating eHealth websites (Figure 2).

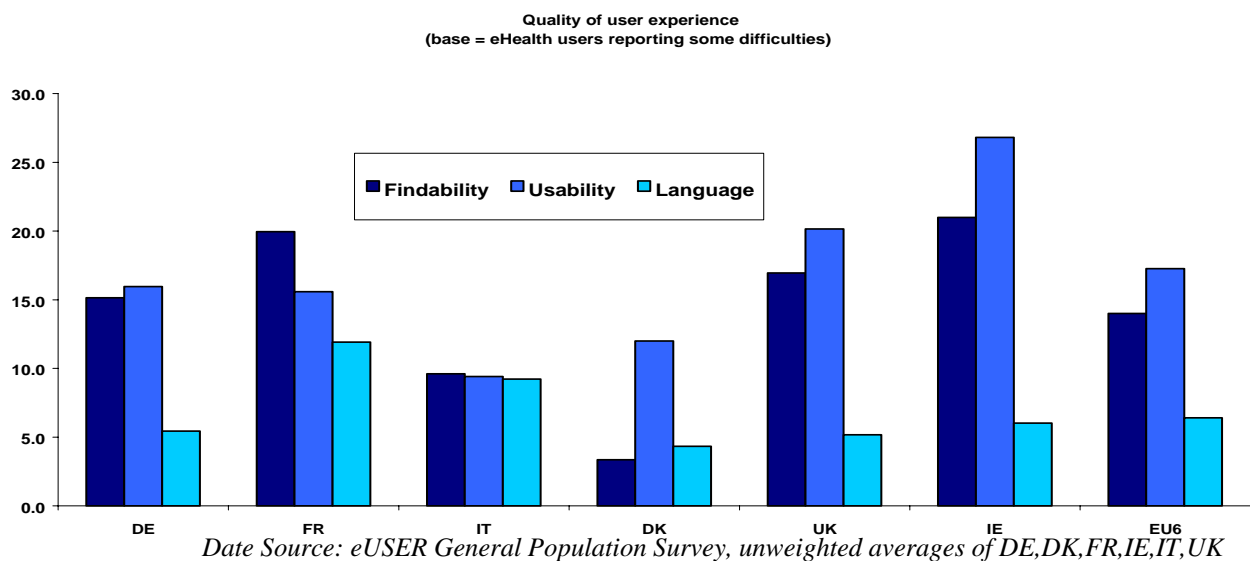
Table 3. Uptake and interest in online consultation with family doctor (share of all Internet users)

	DE	FR	IT	DK	UK	IE
user (= has had online consultation)	1.8%	1.5%	2.7%	3.5%	1.9%	2.1%
non-user, but interested in online consultation	20.5%	30.8%	37.5%	39.3%	37.1%	35.7%
non-user and not interested in online consultation	77.7%	67.6%	59.7%	57.3%	60.9%	62.2%
<i>Total</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>

Date Source: eUSER General Population Survey, unweighted values.

The second set of issues focuses on interaction/consultation with one's own doctor or a health clinic. While currently the prevalence of consulting online with GPs and family doctors among the European population is negligibly small (in Denmark, most advanced in this regard among the countries surveyed, only 3.5% of all Internet users have done so), there is considerable but varying interest in all countries surveyed (see Table 3). One of the implications is that reassurances regarding quality (in a broad sense) of such offerings will be of paramount importance for the future uptake.

Figure 2. Some aspects of user orientation: quality of user experience form a user perspective



5. Conclusion

The evidence available at the time of writing already gives powerful indications on a number of issues which should be addressed by policy-making and service providers, for example:

- Older users and users in less advantageous social circumstances appear to be still insufficiently drawn to the Internet and by extension insufficiently catered for – the implication is that the internet as a resource is still not finely tuned to the diverse audiences. Only well placed users (high education, high socio-economic status) are apparently able to turn the Internet into a practically useful and empowering tool at present – strategies for effectively increasing the potential for other parts of the population still need to be developed.
- Intermittent and occasional use, for example on needs basis, is a reality for many (if not for most) users. Thus while overall, or on average eHealth users appear to pay sufficient attention to the quality, those “light” users are less likely to have a favourite health site they return to regularly, and also relatively less likely to be paying attention to the quality features. The assistance with a direction to, and the provision of a high quality / high trust resource appear to be the best strategy for them, for example in the form of a national or regional health portal overseen, endorsed by, or associated with the Ministry for Health. Still, user beware mantra should remain relevant and it is good to see that even in countries with apparently well-established and trusted eHealth resources (e.g. NHS Online in UK) users are no less quality aware. True, this finding could also be a

reflection of them using and appreciating the existing, arguably high quality eHealth services. Inevitably, eHealth offerings do not recognise borders, and European users (increasingly more competent in languages) are bound to access various sites, implying the need for cross-border initiatives.

- However, once online, eHealth users appear sophisticated enough in some aspects – thus the appreciation of quality ‘signifiers’ seems to be evenly spread across socio-demographic groupings. Indeed, offline and life experience appears to be utilised, since older eHealth users seems to be relatively more quality attentive.
- Finally, there is an idiosyncratic user issue pertinent to the domain - the onset of a health episode is extremely relevant a driver of eHealth use, which corresponds to the “recognition of need” in the model, but will also come into play for consideration of re-using the service (Figure 1). While this determinant is considered independent, however, eHealth offerings may well influence a ‘perception of need’ and one positive example would be their suitability and utilisation for health promotion.

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