Accessible self-service: a driver for innovation in service design?

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Abstract

Increasingly, services are being delivered via self-services technologies, where customers interact with technology, rather than the service provider. If the technology is not accessible, these self-services are unusable. Frustration and dissatisfaction make vulnerable customers abandon tasks or refuse to use these services. This paper takes the view that such cases should not be regarded as unfortunate or irrecoverable situations, but as opportunities for inspiring new types of services, including hybrid 'technology/person based' ones. Such thinking moves beyond user interface and ergonomic design approaches for designing self-service technologies, to designing 'smarter services', supporting customers in their use of self-service technologies, as well as better quality access to people-delivered services. Paradoxically, the latter services, involving organising visits to physical locations, present greater barriers for vulnerable customers. We argue that there is potential for greater engagement in the co-creation of services that, although inspired by vulnerable stakeholders, can be of value to all.

KEYWORDS: self- services, accessibility, vulnerability, Design for All

Introduction

In the world of service design, self-services are often viewed as a particular class of touchpoint in the overall service, or even an alternative means of accessing a service from a provider. The self-service version differs from the human-mediated version, in that contact with the service provider is carried out by means of a machine or an online application. For instance, it is possible to get cash from a teller inside a bank, or from an ATM; at the airport, it is possible to acquire your boarding pass from a clerk at a check-in desk, or from a self-service terminal (SST), or even to check in online and print your own boarding pass/ download it to your mobile phone. Thus, when there are problems with the accessibility or usability of one of these self-service touchpoints, the overall service should be robust enough to have in place an alternative means of delivering the service. Problems with self-services

are thus often set down at the door of the domains of interface design, usability and ergonomics (Glushko, 2010) and left for them to deal with.

We challenge this 'technology mediated touchpoint' view, which we see as limited. We see that in many cases, self-services are no longer just one of perhaps several alternative touchpoints. Rather, they are evolving and becoming an integral part of the overall service, if not 'the service'. This can be evidenced in several ways: firstly, often there are no alternatives to self- service; secondly, if there are alternatives, they are not are not well supported and are inferior to the self-service option; thirdly, users of self-services are obliged to take a far more active decision making role in the service encounter than in that of the users of people-facing services.

To illustrate this with a simple self-service transaction scenario, such as buying a ticket. In many European car parks or train stations, patrons must obtain a ticket from a machine in order to use the service, i.e. to enter or leave the car park or to purchase a rail ticket. These, and other similar facilities, are often unattended. Assistance may be available in the form of supervisory employees but often they not co-located with the building. This human-mediated assistance service is not an alternative; it is for 'rescue' situations, such as system breakdown or emergency.

Secondly, and more fundamentally, the alternative human-mediated touchpoints are most often not well supported, making them an inferior choice. For instance, ATMs allow us to withdraw cash 24/7. The alternative is to wait for banking hours and go to a 'bricks and mortar' establishment. Air travel self-services enable us to do our check-in and choose our seats on the aircraft, the same is not true of checking in at the airport with a member of staff before the flight, who no longer has freedom to assign seats, since most have already been 'booked' by passengers doing self-service.

Thirdly, in our argument, further than the lack of alternatives or 'equivalent in quality' alternatives, we regard self-services as an integral part of the service, because of the participation and decision making role played by customers in acquiring and fashioning the service to their needs and desires. In self-services, users must participate actively, in human-mediated services, they can take a more passive role -offering information when asked, accepting/querying the advice and the decision-making of others. This may not be so important for simple transactions, such as buying a single train ticket from a ticket vending machine. However, ticket self-services are already capable of engaging travellers in participatory and decision-making activities, where users make enquiries about combinations of discounted routes and prices in order to purchase those that are advantageous to them.

What this means is that self-service customers can explore options, and also try combinations that they find interesting and create an offering that is of value to them. The service providers also gain by adopting some of these creative suggestions and putting them back into the service as choices for others (Gerber & Martin, 2010). Indeed, a study of banking services found that 44% of computerised retail banking services were first developed and implemented by individual service users. (Oliveira & von Hippel, 2011), demonstrating that users are in in this way service innovators. This finding can go to demonstrate that Service Dominant Logic (Lusch & Vargo, 2011) is an important, if not always explicitly recognised, component in the design of self-service that goes well beyond simple automating of transactions to creating new types of value based upon resources. Examples might be recommender systems and social media provisions. For this integrated bundle of offerings, there is no interpersonal service equivalent, nor likely to be. The service is predicated on the use of information and communication technologies, blurring the

boundaries of the distinctions between human mediated services and technology mediated self-services. To date, the Service Research community distinguishes self-service from other types of service only by its reliance on technology, with high activity on the part of the customer and low activity on the part of the service provider. This 'high tech, low touch' (Bitner, 2001; Glusko, 2012) distinction may no longer be so clear-cut. However, it is still relevant to note the level of activity (Wunderlich et al., 2013) that is required from the customer in obtaining the services. Without this active participation, the services are not available, and there is no real alternative. That participative interaction of the customer with the technology is the only means of obtaining the services.

Our perspective on self-services being more than just a touch point, to being the service itself, has been developed in part by our research (Darzentas et al., 2013) into the accessibility and e-accessiblity of self-service terminals. Here we have seen that just 'fixing the machine' or 'making a web site accessible' often does not achieve the expected result of including those excluded by the design of machines and inaccessible websites. Instead, a wider service design perspective is required that can range from helping users in a 'just-in-time way', to complete re-design of the extent and types of service offered. We believe that this perspective will be both useful for prompting innovative ways to view self-services as well as to contribute to an understanding of the expanding role of self-services, or technology-mediated services, in the design of service futures.

This paper is organised as follows, in the next background section we set the stage of increasing ubiquity of self-services and user adoption as reported by contemporary commercial concerns and academic service management and business/marketing literature. Next we discuss the current approaches to dealing with problems of self-service technologies and use, from both accessibility research and management, retailing and marketing disciplines. This leads us to our central premise: that an inclusive Design for All approach to self-service can be a driver for service innovation. We further explain this position illustrated by a focus group study. We then move to conclusions and suggestions for future directions.

Background

As with many things in today's rapidly changing world, the landscape of self-services is complex and fluid. A number of interdependent factors are at work, amongst which the most clearly discerned are: that the range of technologies suitable for deployment in a self-service ecology has increased due to technological advances; that businesses have stronger economic reasons for promoting self-services, and that self-service is itself becoming more ubiquitous, reaching wider and deeper into all types of services (Rogers et al., 2007). Indeed, following the classification of Spohrer et al. (2010), we can enumerate services located within a) systems that move, store and process, where we find self-services established in systems for transportation, waste recycling, food and product distribution; b) services that are connected with health, education, finance, tourism, retail and leisure and c) services that govern and serve the public, such as self-service in filling in tax returns online, obtaining and renewing official documents (licences, passports) getting information, etc. One of the most startling examples of just how rapid this ubiquitousness is, can be seen in airport customer management. Here, the goals for self-service are for 80% automation, with travellers doing their own purchasing, seat allocation and check- in, luggage labelling, and boarding pass scanning, as well using automatic booths for immigration checks (Nicas & Daniels, 2012;

FTE, May 2013). Only the security check is not yet automated, although plans have been announced by IATA since 2011 (IATA, 2011).

Customers' reactions to the increase in self-services has been most extensively studied in the management and marketing disciplines. The cost savings from "enticing customers to serve themselves" (Bitner & Brown, 2006, p. 76) in a variety of ways can be extremely large. Because of this, businesses are concerned with the problem of customer acceptance, and acquiring a deep understanding of what makes customers adopt self-service technologies. At the same time rejection of self-service can be very damaging, with customers not just rejecting the service, but also the brand. Thus, the service management literature examines consumers' intentions to adopt self-service technologies along demographic and consumer traits or attitudes surveys. In the demographic studies, the investigators typically study age, gender, education and income, while among the traits they distinguish: technology anxiety; need for interaction (meaning people's desire to interact with person rather than a machine), and openness to technology innovation (Meuter et al., 2000, 2005; Bitner et al., 2010, Wang et al., 2010, 2013).

From this academically based research as from the commercial world, there is a well documented ambivalence to attitudes to self-service. On the one hand, there is appreciation of the customer benefits that can be gained from self-service, such as: autonomy, convenience, and 24/7 availability. As well, there is understanding of the increased speed and efficiency, especially for transactions that machines do well and tirelessly, (most of the time) such as validating tickets or scanning smart cards. Also, from a more socially oriented user experience point of view in various studies, younger people (aged 17-35) (Beinhauer et al., 2011) - but not only - have claimed they preferred the anonymity of self-service terminals to "judgmental employees" (Meuter et al., 2000).

In stark contrast to this last view, among the reasons for disliking self-services is the strong desire for the 'personal touch' and preference to interact with people. This may be also representative of a deeper need. Ethnographic studies of shopper populations have shown that exchanging a few words with the person at supermarket check out is viewed as a pleasurable part of the experience, and for people who might be socially isolated, perhaps the only time during the day when they have face to face contact with someone (Mind, 2012).

In addition, a range of reasons have been cited for customers rejecting self-services, from technophobia and digital illiteracy, to feeling self-conscious. These are the 'don't want to' category. Other reasons are extreme difficulties faced by some people with disabilities or age-related impairments or other inabilities to use these machines or online applications, because of the lack of accessibility features. This is the 'can't' category. Finally, there is a 'conscientous objector' category who believe that each self-service implementation is depriving a service worker of a job. Others question whether self-service in some case equates to 'no-service'. They cite in particular self check out in supermarkets, where customers must scan, weigh, pay and pack their groceries without assistance (Winterman, 2012; Poulter, 2013) or labelling their own luggage at airports.

Of course, this is not a rigid membership set. Just as some people may be able to use some self-services and yet be blocked from others, in surveys, self-styled technophobics have also stated that they would like to gain competence in the use of self-services (Wang et al., 2013). This is desired not only as a means to participate in the advantages that others more competent than them benefit from, but also to reduce uncertainty and enjoy the feeling of self achievement. Customers claim that the confidence to use the machines is more than just completing a task and obtaining the service, it helps them feel independent and able to

function within society, giving a feeling of self efficacy and of "being able to cope in the modern world"(Wang et al., 2013).

An important footnote to user acceptance is that many of the studies about adoption of self-service date from the late 1990s and early 2000s when self-service technologies were still fairly new. In particular online banking and payment systems with smart cards were just being more widely deployed due to technological advances in networking and security. Since then, there has been time for customers to become accustomed to the ideas and for the diffusion of innovation patterns described by Rogers (1983) to enact themselves.

Finally, a further development is that of the increase in use of personal devices to access self-services. These may be fixed, such as home computers, or mobile such as smart phones and tablets. Proficiency with technology increases with these devices that are familiar to their owners, in turn encouraging uptake of self-services that can be performed using them. At the same time, people who do not have personal device access are even more excluded from the services that are deployed with the expectation that the majority of customers have smartphones and Internet connections.

Summing up, the expansion of self-services into more and more areas, although no longer only pushed by service providers but increasingly expected by customers; the near or total absence of human mediated equivalents, and proliferation of new technologies, mean that those who are in the 'can't' category are increasingly disempowered. The next section gives a brief overview of how this aspect of self-services is being dealt with in the services offered by self-service terminals (SSTs) or Kiosks.

Current approaches to problems of inaccessible SSTs

A range of types of problems can be distinguished. At one of end of the spectrum, problems may lie in the design of the self-service terminal, where customers are not able to understand what is required at the interface, (what to press, what slots to use, in what order). Solutions from those involved in usability and accessibility of self-service often tend to technologically based solutions to ease the problems at the interface. As an example, recent work includes 'contactless' interaction (Madrid et al., 2013); automatically sensing the screen height and screen proximity required by users (Hagen & Sandnes, 2010) or enabling blind users to use touch screens by means of gestures (Sandnes, 2012).

At the other end of the spectrum, another class of problems go beyond the SST to understanding the service. For instance, people may walk up to a machine in a car park, but really need to understand the particular parking service paradigm in use, (e.g. is it pay and display? is it pay on exit? how do I pay? where do I pay? and even, when do I pay, before I get in my vehicle?, or on exiting by driving?). Some current technological proposals to deal with these situations are suggestions for interaction with a virtual assistant (Martin et al., 2011), or even human mediated help, delivered via video communication with a remote service provider (Syrjanen et al., 2012).

In addition to interface familiarity or service knowledge, another problem increasingly seen is that of users making false assumptions from one system to another and having expectations that are not met. For example, expecting a machine to accept different types of payment, (e.g. cash and debit/credit card). If the machines only accept credit cards, this blocks non-card holders from using the service, for instance buying their train tickets. This can be

disastrous for a traveller, especially when there is no other type of machine or human-mediated service available. In such a case, providing more information about the self-service system and operation (locations and capabilities, and how the system works) would be an extremely useful service that is actually rarely available. It would be of immense value for those customers who have time to plan their interaction - or for those who need to. This last category is often for those users who have more difficulty than usual in accessing services: for instance, users of wheelchairs or people with other mobility restrictions, such as travelling with small children or carrying heavy luggage.

Turning to management, retailing and marketing disciplines, who are the traditional promoters of service solutions, there is recognition that attitudes towards self-service are fundamentally moderated by the quality of the customers' previous experiences (Rogers et al., 2007). Therefore many scales are being developed by which to measure quality (Lin & Hsieh, 2011). The rhetoric of the self-service management and marketing literature centres on understanding how to get customers to adopt technology. Practical recommendations include suggesting that managers in supermarkets deliberately close some check-out counters, creating longer queues at those that are open, to persuade people to try out the self-service check-out options. Additionally, they suggest campaigns to attract young people by promoting the use of the SSTs as 'fun' and 'cool (Lee, 2010).

In terms of vulnerable customers, it is rare to find in this literature many recommendations for encouraging use by or extending the user base of hard-to-reach customers. As an example, since the literature clearly shows that older people have more technology anxiety (Dean, 2008; Oyedele & Simpson, 2007) and more desire for personal interaction (Simon & Usunier, 2007) practical recommendations to deployers of SSTs are simply that they avoid installing the technology where older people are the dominant population (Lee, 2010).

In this discourse, rather than designing (or redesigning) the machine, the interaction or the service, the emphasis is on the users adopting and adapting to the machines and self-services in their present states. This leaves out those who are in the 'can't' category. It blocks off thinking about ways to improve the access to self-services and takes the approach that these users are special cases that need to be treated separately.

The role of accessibility in driving service innovation

While accepting that there will always be some people who need special assistance, we argue that paying attention to these cases of vulnerable customers, rather than considering them as outliers, could be used as opportunities to point to new services, or new ways of supporting customers in self-service situations, and creating new types of smart services. This is the philosophy of Design for All, a design ethos that takes an inclusive stance on designing, adopting a social model of disability and demonstrating that disability may inspire design (Bieling, 2010) or that stretching and stressing the design brief to include those people who are being left out, can often lead to benefits for all. Taking those who are presently locked out, for whatever reason, and assessing their experiences more systematically using known service design methods such as customer journeys, touchpoint design, service blueprinting and value exchange, could reveal a number of needs not previously voiced, not understood or possibly ignored as they are deemed to represent only a small minority of customers.

The theme of inclusion in Services has been emphasised by the British Standards Institute which published in 2010 a standard for Inclusive Service Provision (BSI, 2010), while the

UK Citizens Advice Bureau has also published a document aimed at service providers highlighting he importance of inclusive services (Iron & Silk, 2011). In service design and social innovation there has been work in various application domains, for instance travel (European Network for Accessible Tourism) and healthcare services (MacDonald & Teal, 2011). Researchers have emphasized the difficulty of hearing from all stakeholders, and described different methods and methodologies for including vulnerable customers into the design process such as crowd sourcing, (May et al., 2013); suggesting that all stakeholders play a role in developing prototypes (Blomquist & Holmlid, 2011); describing case studies using combinations of visualisations techniques and ideation processes (MacDonald & Teal, 2011).

However, service design has not said much (yet) about self-services. This is not an accusation, since service design is itself rather new. Again, in the case of self-service we are dealing with services where technologies are facing the customer, and hence it is to be expected that some problems may be considered to fall outside the range of service design, and into technical realms. What is missing is the development of service design methodologies that are adapted to self-service. As an example, we tried using 'customer journeys', to engage end-users to give voice to shortcomings they have encountered with existing self-services, describe the good and bad of their experience with the whole service, from ticket purchase to exiting the cinema after the film and help to suggest improvements/additions to existing options, and even expand into suggesting new types of service offerings that are not presently covered.

As an example we present a study of cinema goers. This was conducted by means of a small focus group (5 members) based in Greece. The participants were of mixed ages and abilities, and facilitated by the authors and a designer. The starting point for the discussion was to talk about existing self-services and the cinema experience. Standing in a queue for cinema tickets has been in part replaced the ability to purchase tickets online. A paper ticket is still needed and this is obtained by locating an SST in the cinema foyer and inserting a code or the credit card used to purchase the tickets to print out the hard copy tickets.

The focus group members had all used these self-services, and on the whole, disregarding some problems in the user interface of both the online system and the SST, found the self-service advantageous, in terms of avoiding the queue, as well the opportunity to study the seating layout and make informed choices. However, a customer journey exercise revealed that there are opportunities to make the cinema experience more pleasant, and add value for customers and new opportunities for service providers.

Amongst these were: 1) improve the offerings: enable alternatives to the paper ticket printing, such as scanning of ticket on a smart phone screen (as at the airport); enable home printing of ticket; 2) expand the offerings: enable the opportunity to pre-order and pay for snacks from the concessions via a personal device, at the same time as online booking, or as the film is in progress. Although this was suggested by a cinema goer who is mobility impaired and stated that he can never get to the foyer in time to avoid the queues, the idea was heartily endorsed by a mother of 3 young children. She explained food and drink for the children is an important part of their entertainment experience as well as needed to help them to stay still and keep their concentration; 3) The question of delivering the snacks to the filmgoers in their seats was raised, when one of the older member of the focus group reminded us that there used to be usherettes to help people to their seats as well as to sell ice cream during the interval, all members felt this was a value-add they would appreciate!

The customer journey approach uncovered further needs when both the older focus group members spoke about the problem of getting in and out of the cinema complex. The mother also said this was a problem for her. Their present 'workabouts' included: 1) being dropped outside the main entrance by their partner/carer who drove the car to the car park while they waited outside the cinema, (if possible sitting down) for the partner/carer to come and pick them up to take them into the cinema itself; 2) always having a friend/relative/carer (as a favour or a paid service) to accompany them all the time. One slightly mobility impaired participant claimed that it was such a hassle to arrange all this that it made the organisation of a night out at the cinema a major headache, and that he missed being independent and having to depend on the availability of others.

Since we were framing our discussion along the dimension of self-services, the facilitators coordinating the focus group prompted discussions about technological solutions such as the delivery of snacks by drones, being escorted from pavement to seat by 'robotic guide dogs' (from the company NSK). Photographs of drones[1] and robotic guiding devices[2] were provided to help to concretise the idea. The reception to these suggestions was mixed. These were received with mixed feelings but provoked interesting discussions. Interestingly, participants did not focus on usability issues, but were concerned about being stigmatised, one participant said he would not use the robotic guide dog although he thought it was a good idea, unless there were quite a few of them in use by other patrons. Other members of the focus group identified with this and said that such a service whether by technology enabled self-service or human assistance would need to respect their need for dignity. However, another participant commented that being able to use self-service to order the robotic devices to accompany him offered a measure of desirable privacy, explaining; "if I had one of those come to order, I wouldn't mind getting it to guide me several times to the toilet, I am embarrassed when I have to ask my companion to keep accompanying me." Asked about whether they would pay for such services, all felt that a reasonable charge would be worth the value of the service.

This account of some of the focus group deliberations has been included here to illustrate our point that, rather than discouraging customers who are older or disabled, catering to their needs can be helpful to develop services for a wide range of users.

We recognise the extreme limitations of this exploratory exercise- no representatives of the cinema industry or manufacturers of SSTs were present. Further work needs to focus on achieving the right ingredients for co-designing sessions where participants include widest possible range of stakeholders. These will take into account considerations about the nature of the roles of the participants, recognising that collecting needs from 'passive informants' (Blomkvist & Holmlid, 2011) is not as productive as engaging them collaboratively, and thus misses the essential nature of service design.

Conclusions and future directions

In the design world, the work on self-services has tended to focus on the individual technologies used, for instance self- service terminals (SSTs) such as ticket vending machines

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[1] Amazon Prime Air Indoor https://www.youtube.com/watch?v=WvOmFu8gQV8

[2] NSK develops four-legged robot "guide dog" http://www.gizmag.com/nsk-four-legged-robot-guide-dog/20559/

and automated teller machines (ATMs) or applications, such as online banking or travel services.

Speaking of services generally, service designers emphasise that: "a common challenge that all service organisations face is how to create more intimate and responsive relationships with their users and customers" (Parker & Heapy, 2006, p. 15.). Given the case of self-service, where the level of interpersonal service is low, the challenge is how to create such responsiveness when the customer is dealing with a machine or a computer application. This becomes a greater concern, with the increasingly ubiquity of self-services.

Prompted by these realisations, and from our research into the inaccessibility of SSTs for the eAccess + Network project[3], we apprehended some deeper implications not being able to use self-service technologies. It is not just an inconvenience, made more acute by the fact that, paradoxically, these services would greatly benefit the people they often leave out, - people whose age or disabilities make it hard for them to be mobile and to access traditional forms of service- if indeed these still exist. More than an inconvenience, the ability to use self-services means far more than enabling access to services and the service-specific benefits they bring; it contributes to vulnerable customers' quality of life, in the sense of enhancing their self-esteem, their independence and autonomy, and ultimately their ability to participate in society. Looking for answers, we turned to Service Design. Service designers already work under the premises of Service Dominant Logic, understanding that services are co-produced, that value is provided by the customers, who act as co-producers with the service providers in obtaining the desired results, and bringing their resources to the process.

Thus, the purpose of this reflective paper is to point out that the present definition of self-services needs revision, in the light of changing technologies; increasing customer adoption and more ubiquitous deployment. It is no longer adequate to see it as the technologically enhanced touchpoint of a service. Self-services are not simply self-service terminals or online applications whose faults can be fixed by good applications of human computer interaction so that they are accessible and usable by everyone. They are not automated transactions. They now need to be given different considerations to understand how they contribute to overall service design, and how the technology can both empower users to participate in co-creation with providers for the services they value, and in how in doing so, can potentially bring innovative features into self-services, if not new types of service.

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[3] Project conducted between 2010-2013. See www.eaccessplus.eu

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