



Studying the Internet Experience

Barry Brown
Publishing Systems and Solutions Laboratory
HP Laboratories Bristol
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Although the Internet has been incredibly successful as a technology there are a number of opportunities to improve users' internet experience. In this report we explore this through an in-depth qualitative interview study of internet use. The results from this work cover three different areas: the general organization of internet use, shopping on-line and community activities. The organisation of browsing, in particular the management of bookmarks was found to be a difficult task for users. There is also a mismatch between users' tasks and individual web sites in that users' tasks often span multiple websites. For online shopping we explored its popularity and in particular the concerns of users with regard to privacy and security. This uncovered something of a "privacy paradox" between users complaints regarding privacy and their use of supermarket loyalty cards. Finally, in looking at community use of the internet we explored the increasing use of email to share photos and online buddy chat systems.

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User Studies & Design Group, DMSD

Summary

Although the Internet has been incredibly successful as a technology there are a number of opportunities to improve users' internet experience. In this report we explore this through an in-depth qualitative interview study of internet use. The results from this work cover three different areas: the general organisation of internet use, shopping on-line and community activities. The organisation of browsing, in particular the management of bookmarks was found to be a difficult task for users. There is also a mismatch between users' tasks and individual web sites in that users' tasks often span multiple websites. For online shopping we explored its popularity and in particular the concerns of users with regard to privacy and security. This uncovered something of a "privacy paradox" between users complaints regarding privacy and their use of supermarket loyalty cards. Finally, in looking at community use of the internet we explored the increasing use of email to share photos and online buddy chat systems.

1 Introduction

In a number of areas – privacy, personalisation and community – there are opportunities to improve user experience of the Internet. Users are often concerned about giving their personal details over the internet because of problems related to privacy and misuse of information. These concerns go beyond hacking and fraud and include the tracking of browsing habits and personal information without individuals' knowledge. Indeed, recently in the US double-click ran into considerable bad publicity over their plans to misuse their user data. Along with these problems, there are a number of new internet technologies which offer the opportunity to improve the internet user experience. Two examples of this are new personalisation technology, and new peer-to-peer sharing systems. New personalisation technologies offer the possibility of presenting timely personalised information. By tracking individuals purchases and tastes it is possible that these systems could begin to manage more of the internet user experience. There are also new opportunities developing for agent based technologies that operate on internet data, particularly internet data that has been enriched with semantic information. These technologies may also be

combined with the new peer-to-peer technologies. Peer to peer technologies offer ways in which communities could share media and information. While the illegal uses of these technologies – most specifically Napster – have recently gained most attention, there are many legal uses for peer-to-peer. In particular, one area of interest is the sharing of self produced media such as family videos and photographs between groups of friends and family. These areas are of research increasing interest to HP and to the DMSD department as we investigate developing internet technologies.

In this report we discuss an initial study that we have conducted to investigate the possibilities for these technologies with users. Our study was designed around semi-structured in-depth interviews with thirteen internet shoppers. This group was divided into those who had just started internet shopping (4) and those who were regular internet shoppers (8). The aim of these interviews was to probe the current user experience for the internet, and in particular what areas are currently a frustration for internet users.

2 Purpose of this study

The goal of this study was to investigate use of the internet so as to explore the opportunities for a number of new internet technologies that we could build. The interviews we conducted covered three different types of internet use: *E-commerce* (buying on the internet, electronic banking etc.), *internet socialising* (Email, buddy systems, peer-to peer etc.) and *content browsing* (information web sites, such as news, sport, magazines, electronic books etc.). Looking at each of these activities in turn allowed us to separate out issues that apply to different sorts of internet usage. We also asked questions regarding one non-web based area (loyalty cards) to explore what similarities there are between issues such as privacy in non-internet areas and internet usage.

For each of these types of internet use there were a number of different issues that we wanted to investigate. These included privacy, personalisation, community, history and trust. For each of these issues we drew up a list of different research questions to answer:

Privacy

What privacy problems do users have and when?

What is the nature of these problems – are they about privacy *per se*, or potential damage (such as Spam, or credit card fraud)

How much are people willing to give up their privacy for gain (or even potential gain)

What makes people decide whether to register at a site or not?

Do people find registering annoying? Why?

What value is there in a centralised store of personal information which is controlled by privacy agents to only give out information in suitable situations?

Personalisation

What use are users currently making of personalisation services?

How is personalisation being done without these services (e.g. through use of favourites, habits of going to web pages, etc.)?

How do people currently manage their personal information online? What frustrations does it generate for them?

How do you discover new web pages? Is it frustrating?

How would people feel about agents personalising their internet use?

Community

How do people communicate with people online currently?

What tools do people use to share things online?

Do people want to communicate with people they already know online?

Do people want to share media files with their online buddies?

How do people feel about chatting with people online?

History

How can we learn from how people currently browse the web so as to provide personalisation services?

What paths and regularities are there in how people surf the web?

Trust

What makes someone more likely to trust a web site?

Do people feel like they “trust” the web sites and companies they use on the web?

Does “trust” interfere with what web sites people want to browse?

Does “trust” interfere with what web sites people want to purchase from?

3 Approach

To answer these questions we wanted to get some sort of general understanding of what was going on when users used the internet to shop, read and socialise. This implied that we use a qualitative research methodology that was based around collecting rich data. While we were interested in the whole range of activities that users do on the internet, we focused in on the research questions listed above. To find opportunities for new technologies we have found techniques such as this one successful in the past – in particular, when looking at document use (Sellen and Harper, 1997), scanner use (Brown, *et al.*, 2000), mobile professionals (O’Hara, *et al.*, 2000) and music enthusiasts (Brown, *et al.*, 2001). The aim of this methodology is not to specifically establish hypotheses, but rather as a tool to generate understandings that can be used to make guesses about what new technologies might be useful for users. The results that a study such as this one uncovers are therefore results *for design*. In this case, the results discussed here have been produced so as to explore the opportunities for new internet technologies. The emphasis here is on what we can learn about users experiences and how we might design technologies to support these activities.

To collect our data we used interviews at the sites where our participants were actually using the internet, either at home or in the office. The interviews were grounded in actual and recent behavior on the internet to help unearth details about people’s activities. In particular, since we were at the site that individuals used the internet they could explain to us and show us the particular sites they used, the contents of their favorites lists, and so on. Carrying out the interviews at the site of use also uncovered some of the contextual features of their internet use. That is, for example, the ways in which browsing the internet might have to be done at quiet points during a busy job, or even as a way to make a boring job more interesting.

4 Literature

There is an growing literature on electronic markets, and experiences with e-Commerce more generally. One of the earliest papers is Malone *et al*’s seminal paper on the “electronic market hypothesis” (Malone, *et al.*, 1987). In this paper Malone *et al* argued that: “By reducing the cost of coordination, IT will lead to an overall shift towards proportionately more use of markets – rather than hierarchies – to coordinate economic activity”, a hypothesis which has been partially

confirmed by recent empirical work looking at the use of the internet in organisations (Daniel and Klimis, 1999). From this work on the theory of electronic markets there is now an increasing body of work looking empirically at how they work, such as (Kollock, 1999) and in particular research published in the journal “Internet Research”. These topics have also, of course, had considerable attention and discussion in “new-economy” publications such as “Wired”, “Business 2.0” and by writers such as Shapiro (Shapiro and Varian, 1998).

One aspect of eCommerce that is still relatively neglected, however, is the user experience of using the internet. The user interface of web sites has been identified as one of the key factors of success for eCommerce, both in b2b and b2c sites (Nielsen, 2000). As Nielsen puts it: “your competitors are only a click away”, and recent research has suggested that much of the increased market share of certain retailers comes from the usability of their web sites (Nielsen and Norman, 2000). This has made the usability of web sites a growing research area, if only because the current usability of the web is so low. In terms of usability of the web browser, however, there has been less published research, perhaps because of the dominance of the web browser market by Microsoft (although see (Berkun, 1999)). This situation may change in the medium term, however, with the advent of “web-plications”. These are applications that operate over the web yet break out of the web-browser based navigation user interface. More generally, it seems that there will be a blurring of the line between applications and web pages with a range of opportunities for systems that work on this border.

But while the user interface has had considerable attention, unfortunately there is still little published work on the *users experience* of using the internet. How users manage and organise their internet usage has been relatively neglected. While there is numerous quantitative data on internet use, there is a lack of grounded understanding of what goes on during the internet experience, and how the internet is used. To design technologies for improving the internet browsing experience this seems like a suitable place to start exploring, since the processes which are going on when using the internet are of importance for what and how we design internet technologies.

5 Methodology

Participants

The participants selected for this study were obtained through a HP site wide email. In the email we asked for volunteers *from outside HP* to be interviewed about their internet use. HP staff

volunteered friends, colleagues and family from around the South West of England. Unfortunately, due to recent financial constraints we were unable to interview individuals in the US or outside England. This suggests that the results may well suffer from an English cultural bias, although we would argue that this is less important in an explorative study such as this one (again we will return to this point in the conclusion). The participants that we selected to interview for this study are listed in table one.

Occupation	Gender	Experienced Internet Shopper?	Age
University Lecturer	Male	N	26
Publicity manager	Female	Y	32
Graphics Designer	Male	Y	23
Student	Male	Y	21
Programmer	Female	Y	22
Student	Male	Y	19
Housewife	Female	Y	40+
Administrator	Female	N	27
Administrator	Female	N	22
Researcher	Female	Y	30
Student	Male	N	21
Mathematician	Male	Y	45
50% male			28

Table one: study participants

Participants selected used the internet for at least 3 hours a week, and across a range of different levels of experience on the internet. Four of the twelve participants had just started shopping on the internet (less than 2 purchases in the last year) and the other eight were experienced internet shoppers (more than 2 purchases in last year). The participants were an equal mix of male and female (50% each), and had an average age of 28.

Procedure

Each of our participants was interviewed at the PC they use to access the internet. All the participants were asked to have their PC connected to the Internet during the interview. Two of the participants were interviewed over the phone due to their lack of availability. The participants were interviewed for between 1 and 1½ hours, using a semi-structured interview schedule. During the interview participants were encouraged to discuss issues they felt to be important as well as those in the interview schedule. The questions in the schedule were designed to address the research questions described above. Questions were asked around their general internet experience, their experiences of internet shopping, their experiences of internet content sites, and their experience of socialising on the internet. The interview transcripts were then fully transcribed and coded to uncover analytic themes, these themes were then checked back against the transcripts. This analysis was then used to extract representative quotations, and produce the results discussed here.

6 Results

We will discuss the results in four sections. This section starts by discussing the context where the participants used the internet, and some of the constraints and restrictions on their internet use. We then discuss the ways in which the participants organised their internet use, and how they kept track of their online transactions and browsing of the internet. This uncovers a number of interesting practices around tracking internet usage and printing out web pages. The discussion then moves onto the participants experiences with online shopping. The “trust” and security aspects of online shopping are of obvious interest to labs, and particularly the perceived dangers of online commerce. The data discussed here suggests that “risk” could be a better way of discussing this area, and in particular how the perception of risk changes due to online and offline experiences. Lastly, to conclude the discussion of the results we cover how the participants used the internet for social activities with their friends and family. In particular we discuss the increasing use of buddy chat programs, and the swapping of photographs online.

Internet users

Before talking about the main body of results it is worth quickly characterising the users we spoke to, and the context in which they accessed the web. When discussing use of technology it is

easy at times to over-estimate the experience level of those who use the internet. Users were often not clear about the different terminology used to discuss internet technology. For example:

B: How often do you use the web?

I: The web? I'm never sure what the web is. Is it when I click on the "N"?

This said, there was a wide range of internet and technology experience amongst those who we interviewed. Indeed, it is worth emphasising that amongst the participants technical knowledge was not just restricted to technology enthusiasts. Particular devices, such as CD-Burners (which have a broad and obvious use) appear to have encouraged a broader range of people to find out about technology, and how to use it. This said, many of the users had little in-depth knowledge of their computer systems. Indeed, the value of the Internet for these users was its reasonable simplicity. There is no need to install a particular program on a machine so as to access a particular service – these are all available simply by running your web browser.

The participants we interviewed appeared to be broadly split between those who access the internet at home, and those who access it at work (7 accessed the internet mainly at work, 6 mainly at home and 1 equally at both). Our participants were therefore slightly over represented at work, since surveys of the UK internet population show a rough 40:60 split between work and home connections. One of our participants had a broadband home connection, while the other home users relied on 56K modems.

One point about work environments which is worth emphasising is that the software which can be installed on individual machines can be closely limited and controlled by the IT support staff. Again this is an advantage of web sites - they can be accessed using standard software without having to install anything on the host machine. Web browsing is also an activity which is tolerated in most firms and few organisations impose tight restrictions on Internet access. This makes use of internet services on work computers common, whereas installing software on work computers is perhaps more problematic.

Managing internet browsing

This easy use of web services at work means that web browsing is an activity that can be easily incorporated into the working day. Our participants talked about using web browsing as a way of relaxing, or taking a break from work. Interestingly, this form of internet browsing, as with internet browsing generally, tended not to be a near-random "surfing" of the web for pages of interest, but rather was more focused around particular activities such as checking your bank balance, or the prices of a particular item you are interested in buying:

B: How often do you browse the internet?

Not that often. Normally when I'm trying to find a particular piece of information

Internet use also appeared to fit into the working day as something that would become part of individual's daily routines. For example, some users browsed the web at set times – say every morning or every lunch time:

B: How often do you go on the Internet?

A: As much as possible! Every time I get bored but generally quickly when I get in to work, lunchtime and then before I go home

I tend to surf first thing in the morning and that's for specific things, its not just general ... depending what the day's like I do a bit towards the end of the afternoon.

For home users internet sessions would often be motivated by the need to do a particular activity. That is, a user would decide to do their grocery shopping, try out a web site that a friend had recommended or to complete a bank transfer. Interestingly, going online as a leisure activity was less discussed by participants; although obviously some activities (such as online shopping) could be considered to be both leisure and purposeful, in that the task itself is enjoyable:

There are a lot of times when I have a purpose, most of the time it's purpose. At the moment I'm doing a lot of travel stuff, I'm going off to Asia for two months so there's a purpose in most things I do but I call that fun as well

I must admit 90% of the time it's for a purpose; I don't tend to surf for fun.

As for the pages that users visited, the participants talked about their internet use being structured roughly into three levels. There were pages which they would check every morning, these were their main web sites. Then there were other sites that they would check more sporadically when they had some time. Along with these there would be pages that they visited when they needed to do something specific (such as to purchase a book), and pages from the general internet which they might explore and come across by searching or by accident. This structuring of web pages can be seen as a kind of hierarchy (figure one).

So, for example, a user might check the BBC news web page and their online bank every day. Then every few days they may go to handbag.com to read some features, or jungle.com to look up prices on computer equipment. If they specifically need to buy a CD (which might happen every few months) they would go to amazon.co.uk, since they have used Amazon in the past. Finally, when wanting to buy a minidisk player they might search using google, and find a review on eopinions.com. Later they also browse around eopinions and add it to their favourites – it becomes a page that they use when they are looking for specific information. In this way web

sites would be discovered and sites would move between the different categories, as users' interests changed or they discovered new pages.

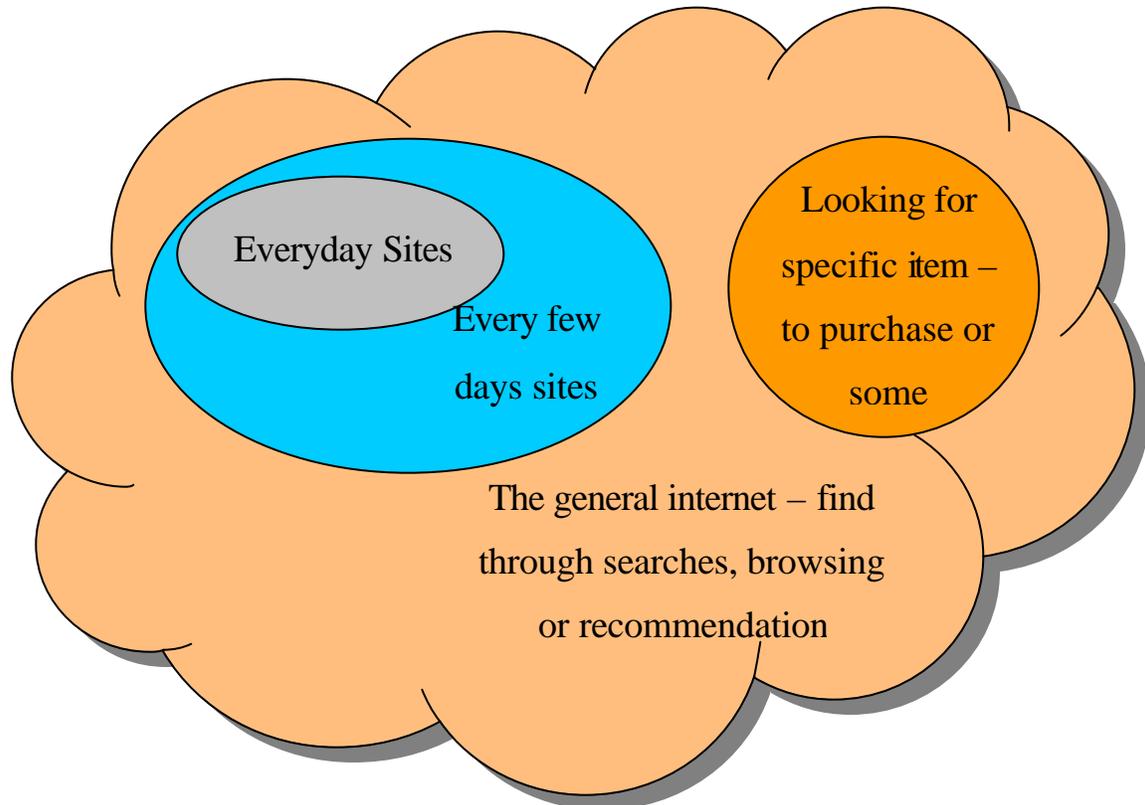


Figure One. User structuring of the web

I do it every morning ... I check my bank account ... I'm so appalling with money ... I check the BBC everyday, and I check the bbc Bristol, yahoo to check my (mail) account ... there are lots of other websites I use, Tottenham hotspurs which is fantastic. You can actually plot through the year what I've been looking at when I was buying a house you've got all the mortgage companies

This said, the tracking of web sites should not be seen as an ordered activity. In fact, for most users this was fairly chaotic. Users generally kept track of sites using one of three methods – they would keep sites in their favourites, search through their history or they would attempt to guess.

there are only a few [web sites] I put them in my favourites. Some of them I don't but they pop up when I put the name in.

While the favourites or bookmarks list in explorer or Netscape might seem sufficient for tracking web sites, it has a number of key failings. In terms of managing the list, keeping the list in any sort of order involves considerable effort in moving favourites into individual folders. Without this the list soon expands to a huge list of text. The favourites list also only keeps the name of the

site in the list, making it difficult to differentiate between different sites visually and to find sites quickly. Certainly, there is much more opportunity for graphical representation of web pages (such as thumbnails). It is also easy to forget to put something into the favourites. Indeed, since putting a site into the favourites increases the list which one has to search through to find what you are looking for, there is considerable incentive *not* to put sites onto the favourites lists. Also, frustratingly for those who use multiple machines, the list of favourites is tied to a particular machine. This means that a web site can often be in the wrong place, in that its address is bookmarked on the wrong machine.

Users worked around these problems in a number of ways. Some users abandoned using favourites altogether, and instead resorted to using the history of the sites they had been in explorer. By typing in the name of the site, the history matching mechanism would usually find the site they were looking for. Other users would attempt to guess web sites from memory – usually by putting www and .com before and after a company name, although this obviously did not work very well for non-company sites.

Ironically, the way that the favourites mechanisms work encourages users to bookmark the sites that they visit the most, and are thus least likely to forget. The favourites mechanism fails to help users track sites in which they occasionally visit when they are looking for a specific item. One of the participants even resorted to writing down the web sites that they wanted to go to, since they found this mechanism more reliable and portable than using the favourites mechanism in explorer. It certainly seems that managing web sites could be an area for much improvement for web sites.

Finding out about new web sites

Again, as with managing the current list of web sites, finding out about new web sites was a fairly haphazard activity for most users. Major sources of finding out about new web sites were the press (magazines and newspapers), friends, and search engines. However, despite the attempts of search engines such as Yahoo! searching for web sites specifically is still problematic. So, for example, to find a garden plant retailer in the UK is not something which is straightforward on the internet, even with human indexed systems such as Yahoo! This suggests that this is an area that could be approached more systematically with technology. Specifically, systems could watch a users web browsing so as to suggest new web sites that they could be interested in. As a

collaborative filtering problem this is fairly straightforward, particularly because the preference data is already recorded online in the form of web searching histories.

Printing out web pages

Users often printed out web pages, and this highlights a second issue which impacted on web browsing. Web pages are continually changing content and often pages ‘die’, or are taken off web sites. This means that if one wants to guarantee access to a web page, then the most sensible thing to do is to print that page out. Printed web pages, then, play an important role in the use of the web. They allow different web pages to be reliably referred to, and they can be flexibly managed, by putting into folders, or arranging on a desk. Unfortunately, there are incidents where users do not have access to paper, and also paper is not always the correct medium – one might want that document to be available on a laptop, for example. This suggests that there might be potential for a mechanism which allows web pages to be ‘clipped’ and stored for access later. Again, ease of management of these web clippings would be important so as to not encounter the same problems which are experienced with favourites.

The ‘meta task’ problem

A broader problem is that the tasks that our participants usually wanted to carry out were at a level above that of a specific web site. For example, one participant wanted to plan a trip to France, from England, with his car. This involved going to a number of different web sites. Firstly, he looked at the different costs of crossing over the channel from England to France. Then he worked out the distances between the different ferry ports and the town he wanted to visit. Then he worked out how much petrol it would cost, using his knowledge of current French petrol prices. Adding all these bits of information together he then worked out the cheapest and fastest way to get him and his car to France. This was not a straightforward task; it involved visiting over six different web sites, consulting a car atlas and a number of travel brochures, taking notes on all this information and combining it to get the information needed.

In the past, tasks such as these would be carried out by expert intermediaries – such as a travel agent. This suggests opportunities for electronic intermediaries which can automatically pull information from different sources and work out the different possible solutions. For example, for the above problem one could imagine a “a-to-b” web site where one could put in two different towns and the web site (or application) would work out the possible routes. While this is a fairly straightforward example it does demonstrate how users tasks often sit at a level above that of the

individual web site. The first manifestation of this is perhaps comparison web sites which will search for the prices of a given product (such as www.kelkoo.com). However comparison web sites currently fail to integrate the purchase into the actual web site – and as such lose what should be the main profit source for an intermediary. A travel agent, for example, does not want you to go direct to the airline since they lose their commission. Of course, there are many non-technical reasons for this.

Internet shopping

These observations move us on to consider our participants' experience of shopping online. This is obviously a very popular activity, and one that is increasingly an everyday method of purchasing goods. As with general web browsing internet shopping suffers from similar problems such as the low usability of shopping web sites and the shopping task being at a 'meta-level' higher than individual shops. Perhaps most importantly, however, there is the issue of *trust* and the related issue of *privacy*. That is to say, how can we trust internet shopping such that we won't be damaged in some way, and how can we be sure that our details will not be shared without our knowledge. In this discussion I would like to describe this problem as one of *risk*. That is to say, how do individuals judge and guess the different risks which they encounter when shopping on the internet. Looking at the problem as one of risk is useful since it allows us to take a view from the level of individual users. Individual users, after all, will be the ones who judge the risks involved in different situations and in turn whether they will proceed with a purchase or site usage.

Convenience

Before moving onto discussion risk, however, it is useful to broadly discuss what motivates internet shopping and some aspects of the internet shopping experience. Perhaps the most important aspect of internet shopping is its *convenience*. Users shop on the internet in part because it cuts down on the travel time involved in visiting a physical shop. While the actual finding and purchasing of an item can often take longer on the internet, due to poor web site design, the elimination of travel time means that shopping can be carried out at times when shopping would normally be impractical. So, at the end of the day before an individual goes home they can purchase a CD or book. Of course, while the "time to shop" is reduced, the time until actually obtaining the goods is increased, since the goods must be delivered. Moreover for

many goods the reduction in physicality limits the shopping experience. Returning goods is also something which is more involved online than offline:

B: What makes you shop over the internet?

A: Complete laziness ... I couldn't be bothered to get on the bus and carry the shopping back so I got someone else to do it.

I go through phases, It depends on what's happening at home. My sons play football so in the football season I don't because I'll do my shopping when I drop them off so out of the football season yes I do, weekly.

Q: Have you ever bought any clothes [online]?

No, it doesn't appeal to me. I actually like to see what I'm buying

Q: Why do you shop on the internet?

Time.

Along with these factors Internet shopping offers an important price advantage. Internet retailers can sell items at a lower cost since they have lower overheads (at least in theory). This means that for some items online shopping – as with mail order shopping – will attract consumers for whom cost is their most important factor. However, cost, as with the other factors described above, can influence individual consumers in different ways. For some of our participants we interviewed, searching for the cheapest price was something of an end in itself, and they would go to the extent of checking with numerous web sites and online stores until they made a purchase:

Sometimes you get a lot more choice, and it's cheaper, with BOL and Amazon competing and they're a lot cheaper than what you'd buy in the shop anyway.

It is the price to be honest. What I tend to do is wait until there are at least five or six albums I want and then I bulk buy in one go and it works out cheaper on postage and everything.

Other users were relatively cost insensitive and instead would stick with a web site that they knew, and had used before, most commonly Amazon. This is similar to behaviour with conventional shopping. For example, in the UK some consumers will shop in Dixons or Comet for electrical goods, even though these retailers are premium priced over independent stores. While often consumers are simply buying the same product at a different price, the main chains appear to have an attraction (such as convenience) for some consumers which balances the higher prices. Along with price, internet retailers can also offer the ability to purchase items which are rare or of a minority interest. Speciality items (such as, for example, a particular type of football scarf) might be hard to track down normally, but on the web they can be ordered and even shipped from overseas. Internet shopping is thus a great medium for specialist purchases:

I bought by husband a gift voucher for Christmas for one of those off-road-4by4 things ... it was more interesting to do it on the net ... it was quicker.

I'm interested in air guns, these things [shows me a very real looking gun], they look real but they fire plastic pellets and I looked at a site in Hong Kong where they sell them, it's all perfectly legal, it's not illegal stuff

Katie Shaw's related report discusses these factors, and the balance between online and physical shopping, in more detail.

Trust and Risk

A more specific topic of interest regarding internet shopping is the role which trust and privacy play. As mentioned in the introduction to this section, one way of looking at these issues is to discuss it in terms of *risk*, both in terms of actual damage (in terms of Spam email or financial or time cost) or perceived loss of privacy. The participants we spoke to who had not used the internet for shopping, or had just started, were very cautious about risk online. They talked about perhaps being "stupid" for shopping online, and often made reference to media reports of fraud online. Since many of the issues regarding security online are highly technical, these individuals did not appear to have any way they could clearly decide on the security or not of the internet, or the security of individual sites.

Yet despite these hesitations experiences with friends and colleagues had encouraged these participants to show an interest in shopping online, and to consider experimenting with making some purchases online to "see what happens":

A: I don't actually buy things online, but I do use all the shopping sites, I'd find out everything I need to know from the web and then I'll actually phone up or do it in person, largely because I'm not used to having my card number floating about [...] I think it's probably because no-one has ever sat down and explained to me the type of safety precautions they have. After you rang the other day Dan explained to me about all the safety precautions sites like Amazon have which no one had told me about before

B: So you didn't know whether it was safe or not?

A: Yes, you heard all these horror stories. I would certainly think about giving [online shopping] a go in the next couple of weeks.

Interestingly however, the more experienced internet shoppers still shared these hesitations about shopping online. These hesitations did not appear to prevent them shopping online:

I am a bit wary of giving my credit card number away ... but for instance (buying online) the hovercraft ticket was so beneficial for me that I took the chance

Yes, someone might steal my details or what proof have I got, I haven't physically got a ticket in my hand, I haven't physically got a receipt in my hand, what is there to see when I get to the airport my tickets don't arrive, you know how do I get hold of that person to say you've taken the money, it's that sort of detachment from you and the service provider... But having said that I do book my flights over the internet because it's cheaper.

B: Have you ever not shopped at a website?

A: Yes ... there has been a couple, either I've heard and taken notice what people are saying that it's not secure or I've not been happy with it.

B: Do you think it's quite safe to shop from the jungle website?

A: Well I used to think so... but you're making me worried now! ... no I don't feel too bad about it, I did when I first started shopping on the Net, I was very frightened and I think I bought something once and I thought oh no I'm going to get masses of other people's bills on my cards and things. But no, I've never had a problem yet – touch wood.

A: I am worried about the security issues of putting my credit card over the internet ...

B: But you do buy some things on the internet?

A: Yes I do because I find it easier to find specific titles I'm looking for ... if I want books then I can just get them off the internet, it's easier and quicker and cheaper and they get delivered to your door.

For these regular online shoppers it appeared that they had decided that internet shopping was sufficiently safe for them to use it. One way of explaining this is to say that the participants were attempting to make judgements regarding the *risks* involved in their actions. While media reports obviously have some effect on these judgements, the views of friends and colleagues are likely to rank higher, and personal experience highest of all. This is a finding confirmed by studies of perceptions of risk with new technology *per se* (Slovic, 2000). So if individuals use the internet for shopping and find that they experience no immediate problems, then their judgement of the risk of online shopping decreases. This causes the other factors described above – such as convenience and cost – to dominate their use decisions.

This judgement of risk appears to be generally attached to the use of a new media or technology such as shopping on the internet. So, for example, participants compared having their credit card details stored in their wallet to having these details stored on their computer. A physical wallet is something which individuals know about and can control – a 'computer wallet' is something unknown, and not as easily controlled. So when participants were asked about their computer storing credit card details and such, there was considerable hesitation:

B: How would you feel if your computer stored your personal information and gave it out to the websites that asked for it?

A: I would probably be a little concerned because I've got four sons ... just in case they were able to access it and do things that I wouldn't want them to do.

Security problems online: Damage and privacy

An important question to ask at this point about this fear of risk is: “risk of what?” The two main forms of risk on the Internet are risk of damage and risk of loss of privacy. The potential for damage is fairly straightforward. It can take the form of credit card fraud, no delivery of goods, or Spam messages sent to your email address. While direct credit card fraud is covered by most cards, gaining a refund can take considerable time and effort. When we discussed the problems of security online it was these “damage” items which seemed to be the most immediately obvious to the individuals we interviewed:

I normally tick the box because I don't want things passed on ... I cannot stand junk-mail

However, on encouragement our interviewees also admitted that they were worried about their privacy, although this was often described in very general terms:

I only tend to give out my personal details when I have to ... what really annoys me is they all expect a phone number ... why on earth should I give them a phone number when they're only dealing with me over the net?

I think we should be very worried about who's got access to your information. I've no doubt there is in existence a Big Brother ... there's not much you can do to stop it unfortunately ... its quite worrying to think how much information about me is on the web, you're shopping habits, what food you eat, what cigarettes you buy

B: How do you feel about companies tracking what you do on the internet?

A: It's bit like big brother, I don't really like it.

B: But it doesn't stop you from doing it?

A: No, because if I really wanted to do something I would brush it aside slightly. I don't know anything that I have to do, perhaps if I did it would be different, but its just the general uncomfortableness of why should people know?

Indeed, while individuals would describe a general fear of “big brother”, or having their privacy infringened, they were still perfectly willing to give their personal details out so long as there was some advantage to this. This can be seen in the participants' use of loyalty cards – all of the participants except one had some sort of loyalty card that they used when making purchases in conventional stores. Even those who had previously complained about their privacy appeared happy to have their shopping tracked with a loyalty card:

B: What about loyalty cards like the Boots one where you get points?

A: Oh I get lots of them, you name it I've got it, BP, Argos, Boots, Sainsbury's, Tesco's [...]

B: Do you mind that the shop can track what you're buying?

Yes, but I want freebies, every single person has a couple of store loyalty cards so its going to happen anyway, there's not much you can do about it [...] in this world we're tracked by CCTV cameras ... so its going to happen anyway.

Yes, because a store card is only food isn't it. I mean what information are they going to get out of what food I buy?

Overall the discounts you get for me is enough to give them that information.

This perhaps presents something of a paradox, in that while our participants seemed to be willing to volunteer general worries about privacy, in turn they were also willing to lose that privacy for very little gain.

There are a number of solutions to this paradox. Firstly, it may be that the issue of *control* is important here. As has been shown in a number of other studies of privacy, controlling visibility is an important issue for users, even if they do not themselves even use that privacy protection (Isaccs, 1997, p 193). With the internet it is possible that users perceive that they have very little control over their details, and this contributes to their general concerns. Secondly, it is possible that the details held with loyalty cards (such as supermarket purchases) are considered to be so trivial to be unimportant. More personal details which are transmitted over the internet (such as bank statements) may cause more concern.

A more complex answer may also be that participants feel that they *should* be concerned about these issues – in terms of appearing as reasonable individuals – although in practice these issues may not actually influence their practice. This is perhaps similar to the “hidden voting” effect in surveys of voting intention, where individuals hide their true voting preferences. In this case, individuals feel that they should be concerned about privacy, yet they would not actually pay money or put effort into protecting their privacy.

Investigating this issue is difficult, since methodologies that are based around declared rather than actual activity are likely to all suffer from this problem. One possible way to investigate this problem would be to give privacy software away for free to a range of users to see which users bothered to set the software up, and to use the software on a day to day basis. That said, again this might suffer from the problem that in a particular test users might change their behaviour so as to appear concerned about their privacy when they are not. This is obviously a difficult issue that would repay more study.

Community and friendship

Moving on from privacy, our last set of findings are concerned with how the participants used the internet for social activities. Not surprisingly, email was heavily used by our participants to communicate and keep in touch with their friends and family. Along with this, however, there

were two sets of interesting new behaviours that were developing around the sharing of personal photographs, and around the use of Buddy Chat systems such as ICQ and MSN messenger.

Photo Sharing

The majority of the participants had received photos in their email from friends. This usually took the form of a short email with one or two photos, usually celebrating some event. Indeed, we would expect that most readers of this report would have experienced a similar email, sent to a group of friends with a picture or two attached. Many of the participants, however, had gone further and had uploaded a set of pictures up onto a web site:

We sent out loads of Christmas photos to everyone who wanted to see them, we've now ended up putting them on a website because it was easier

Yes, I can show you, this URL here is the URL of my wedding, that's where I used to live, that's all my nephews and nieces, this is my little home page. So I just sent that URL to a lot of relatives that couldn't come. We got married on the Saturday, that was up and running on the Tuesday

B: How often do you send photos out?

A: Mainly when I've been away for a week and I've made a burst of images I'll attach them to emails to send to my friends.

B: Would you like something where you could just put them up somewhere and they could download them rather than having to send them?

A: To me the threshold of doing that sounds like a bother. Putting them up on one website if it was easy would be good. It's easier for people to check that website, I get every annoyed when there are loads of pictures and it's so slow. [...]

B: what about using services for sharing photographs online?

A: No, to me still the threshold is a bit high, to think about it is just complication – it stops me before I even go to the website I just think OK complication, hassle, I won't go there.

Putting a web page together has a number of advantages over emailing photographs, in that sending a large amount of photos through email was considered rude; many people only have limited internet connections and large files can 'block' email. Also, many people receive their email through free web-email services such as hotmail. These services usually have limited capacity, so filling up the email can prevent other email from getting through. Putting up a web site, however, is not a simple task and involves considerable effort. Indeed, putting up a web site would have been beyond the computer skills of many of the enthusiasts. Accordingly, these individuals were restricted to sharing only a small selection of their photographs online, and needed to send the rest of the photos through the post, or not at all.

This suggests opportunities for an easier way to share photographs – and perhaps other files such as music (copyright notwithstanding) – online. Indeed, this is a direction pursued by websites

such as shutterfly, the late cartogra, and the hp “share to web” software (<http://www.hp.com/cposupport/scanners/software/sj517en.exe.html>).

Instant messaging

A second interesting behaviour concerned the use of instant messaging software, such as ICQ and MSN messenger. About 1/3 of those interviewed ran one of these programs, and used them to keep in touch with, and chat with friends:

I use MSN messenger because all my best mates are students on placements all over the country and ... I tend to chat to them and it's the only time I talk to my little brother

Indeed, these systems are interesting in how they create “virtual office shares” between groups of people. While these ‘spaces’ of course lack nearly all of the important affordances of physical spaces, they do allow for limited interaction. Moreover, the simple notification of someone being “there”, gives a group of users some cohesion. Users are notified when someone is at their computer, comes into work, or leaves. This is perhaps similar to seeing colleagues in an open-plan environment, where you can hear a colleague, but perhaps not know exactly what they are working on. This has an interesting similarity to work on desktop video conferencing. Much of that work showed that desktop video conferencing had severe limitations as a collaboration tool. However, one useful way in which the technology could be used was to create virtual office shares between two friends who were geographically distant (Dourish, 1996). These friends used an always open video conference channel to create a link between their offices. In a similar way to the use of buddy chat systems, they knew when each other came into the office or went away from their desk, yet the quality of the link was not sufficient to work out exactly what the other person was working on. It could be that instant messaging goes some way to creating similar groups of “virtual sharers.”

7 Conclusion

In this report we have reviewed some of the practices surrounding the use of the internet for a range of different activities. These different activities all underline the health of internet use, and how applications (such as buddy chat) are moving beyond enthusiasts into use by the general population. Indeed, as technology moves in this direction concerns over the on-line world move from being concerns with technology to more general *public* concerns. There is no denying, for example, that the sharing of music using Napster was a worldwide public event rather than a

technological one. In this paper we have used qualitative interviews to attempt to generate some understandings about the internet user experience amongst the general population. In the thirteen interviews conducted there was an attempt to look at how users organise their use of the internet, how they feel about shopping online, and how they use the internet for social activities. These data show how internet use has begun to fit into individuals lives, both in terms of their work and their leisure. Obviously, with results such as these it is possible that there is a cultural bias to the results. We have also interviewed a relatively small group of individuals. However, the aim of this study was to explore the details of internet use with these users, rather than draw strong conclusions about internet use practice. As an exploratory study the results should thus be taken as a start to understanding internet use in-depth, rather than as the final word.

Looking generally at internet use, we uncovered some of the problems which users have in managing their internet experience. In particular, the use of favourites does not properly meet the needs of users in managing their web site accesses. One participant even resorted to writing down the addresses of the web sites she used to get around these problems. A more fundamental problem comes from the fact that web sites are often insufficient at meeting the needs of the tasks which users want to complete. That is, the tasks often involve use of multiple web sites along with the complex task of putting different bits of information together.

The report then moved on to discuss user experiences of internet shopping. This was a valued activity for nearly all of our participants, for the convenience it provided to them compared to physical shopping. It was, however, complementary to physical shopping and did not in any way replace their need for shops. Rather, the ability to shop from a PC – without having to physically travel to a shop was of great value. This said, the study participants were still concerned about the risks that they took when shopping online. While part of this was the possibility of direct damage, there was also a concern about their privacy. It is difficult to judge the severity of this concern however, since the participants were also happy to use store loyalty cards for only minimal gain. This is something of a 'privacy paradox'. In the final results section we looked at how the internet is increasingly used for community based activities, such as instant messaging and photo sharing. Photo sharing in particular is an activity that is commonly currently carried out over email, although this is a somewhat cumbersome medium for this activity. Instant messaging is also a very interesting activity that is increasingly being used by groups of friends to support forms of virtual space sharing.

To conclude, in this report we have attempted to investigate the use of the internet in an in-depth manner, looking at the individual practices of internet users. This study has uncovered a number of different problems and opportunities in the internet experience of users. Yet the internet has proven to be a hugely successful technology, and meets a broad range of needs for the users we studied. The challenge is to improve on this experience without adding undue complications.

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