PRIVACY ON THE INTERNET: ATTITUDES AND BEHAVIOURS

Lizzie Coles-Kemp and Yee-Lin Lai,
Information Security Group, Royal Holloway

Margaret Ford, Consult Hyperion

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Introduction

"The project aims to develop an interactive means of engagement which enables people from all walks of life to engage with on-line privacy and consent issues, in the same way that the concept of carbon footprinting has enabled large parts of society to engage in the subject of the environment."

Lizzie Coles-Kemp, Project Leader from the ISG

This study forms one of the outputs from the VOME (Visualisation and Other Methods of Expression) collaborative research project. Researchers from the Information Security Group (ISG), Royal Holloway, University of London, the School of English, Sociology, Politics and Contemporary History (ESPaCH), Salford University and Department of Informatics and Sensors at Cranfield Defence and Security, Cranfield University are working together with privacy and consent practitioners from Consult Hyperion and Sunderland City Council in order to develop new ways to engage service users and service providers in privacy and consent dialogues within and related to on-line services. The VOME project is funded by the Technology Strategy Board, the Economic and Social Research Council (ESRC) and the Engineering and Physical Sciences Research Council (EPSRC). VOME aims to produce methods and tools for negotiating and engaging with privacy and consent. These tools could help service users define, agree and check levels of privacy when using the Internet and might help service providers respond more effectively to the service users' on-line policy concerns.

An online survey of over a thousand respondents was carried out in partnership with UK online as part of the process of developing a backdrop to the VOME research. Privacy scales [1, 2] typically used to measure privacy attitudes and behaviours have been deployed in this survey so that comparisons can be made with previous surveys of this nature. VOME will use this survey in conjunction with the qualitative research currently being conducted by its researchers in order to develop a more contoured picture of on-line privacy attitudes and behaviours. This picture will be presented in follow-on reports.

Overview and Summary: Attitudes to Privacy

Part I: Internet Use and Attitudes

94% of respondents access the Internet at least once a day, with a significant majority accessing it several times a day. Just over half the respondents have been using the Internet for between six and ten years. The remaining respondents are divided quite evenly between those less experienced (0 – 5 years) and the more experienced (over 11 years). It is important to note that, although these figures provide an indicator of the number of years spent online, there are other factors that contribute to Internet experience and the qualitative research will look at these factors in some detail. Nearly all the respondents (96%) are able to access the Internet from home. The majority also have Internet access at work, and 9% access the Internet at school. Very few (3%) regularly use other means to access the Internet.

Activities on the Internet

Within the sample, use of e-mail is universal, with news, web searches, shopping and use of online maps and directions also very popular, with around 90% of respondents having accessed these at some time. Moderately popular activities include participation in social networking sites, job searches, and searching for health information. Rating products and services, which appears to be a largely altruistic activity, is also moderately popular.

Activities such as participation in virtual worlds and online dating scored low levels of actual participation, despite their extensive coverage in the media.

Experience/Knowledge of Privacy Invasion

Responses in this area are necessarily based on individual perception, with some considering receipt of a single spam e-mail to be an invasion of privacy, while others might regard substantially greater intrusion as entirely normal. Hearing news of privacy invasion is naturally more commonly reported than direct experience of it.

Although the majority of respondents do not report misuse of credit cards or other personal information, a very substantial minority (22%) have experienced misuse in this area. Indeed, of the top four concerns about Privacy on the Internet expressed by respondents, two relate to credit card misuse.

Significantly lower levels of concern are reported around unauthorised access to medical records.

Resources for Internet Use

The majority of respondents access the Internet via a wired broadband connection (either DSL or cable); however both ISDN and wireless (dongle) are surprisingly common means of access at 17% and 16% respectively. Most have access to high speed links and report owning a wide range of access devices.

Attitudes towards Privacy

The responses to questions relating to overall concern around privacy would suggest a reasonably balanced attitude. The largest group is 'somewhat concerned' (49%), with greater concern shown by 27% and less by 23%. There is a greater level of concern around personal information being acquired by strangers than by family, friends and acquaintances.

Attitudes towards Internet Mechanisms

The majority of respondents do not believe that sites will honour the online privacy policies they have posted. However, 86.6% reported that they are more comfortable using a site which shows a privacy seal, or other evidence of third party audit. The tracking of web pages visited by an individual is predominantly regarded as either harmful (43.1%) or both helpful and harmful (39.7%). Very few regard it as purely beneficial.

General Concern for Privacy on the Internet

At the heart of the report is the ranking of general concerns about Privacy on the Internet. 'Online identity theft' is associated with the highest level of concern. This is perhaps in part due to the influence of news stories and public information initiatives and in part due to the nature of the Internet use.

Looking more widely, key concerns relate to individuals having their personal information compromised. Amongst these concerns, finance features prominently, as does the exposure of personal information and the potential for

individuals and companies to misrepresent themselves. Gender, length of Internet experience and education levels all contribute to affecting the level of general concern. The survey contains some interesting pointers as to the nature of this effect: for example female respondents appear to have a higher level of general caution than male respondents; the more years someone has used the Internet the lower the general level of caution and education levels affect the nature of the concern.

Part II: Internet Users' Information Privacy Concern

The majority of respondents agree that control and autonomy over the use of their data is important. However, 13.6% of respondents 'hardly ever' and 5% 'never' read user agreements and privacy statements before disclosing personal information for registration to use an online site. Of the technical measures explored, 86.2% of the participants watch for ways to control what people send them online, while only 10.4% fail to engage in such safeguards. There also appears to be a slight tendency for both more experienced and more educated users to read user agreements and privacy statements.

## Part III: Protecting Privacy on the Internet

There is a marked increase in levels of concern for those in the higher age group (41 years and above), as compared to the lower age group (40 years and below). Older internet users tend to be more cautious and yet people with more years of online experience are less cautious.

Whilst female respondents exhibited a higher level of concern, this is not translated into using technology to protect their privacy. Male respondents, on the other hand, were much more likely to use technology to control their privacy. Further, there are indications that ethnicity[1], as well as gender, has some influence on the degree to which technology is used to control privacy.

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[1] Ethnicity is one demographic factor employed to discern the disparities in levels of privacy concern. We have adopted the typical measurement for ethnicity used in large scale government surveys. The measurement tool includes the following categories: nationality, skin colour, and racial group.

Use of the Internet

Frequency of Internet Use
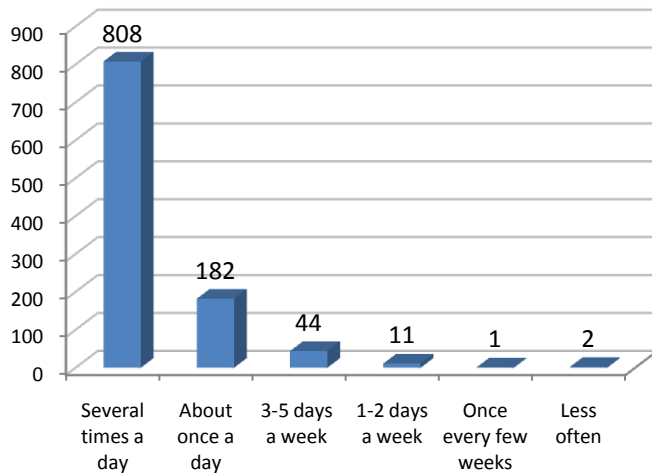
How often do you use the internet?

Internet use is prevalent amongst the respondents. The majority of respondents (77%) access the Internet several times a day. 17% use the Internet once a day. 4% access the Internet 3-5 days a week. 1% access the Internet 1-2 days a week. Less than 1% use the Internet less frequently than once a week.

Years of Internet Experience
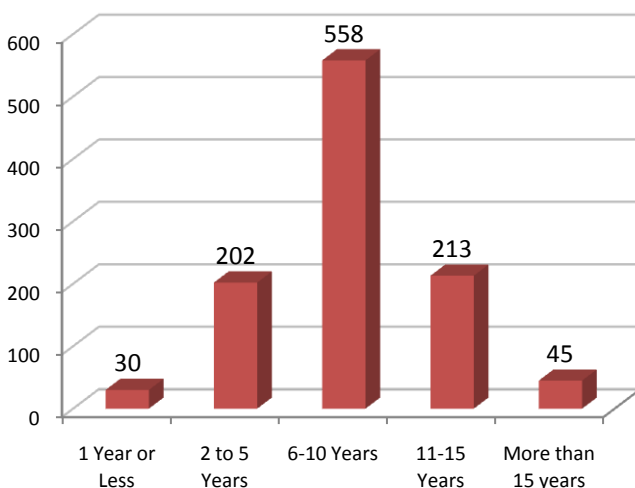
About how many years have you been an Internet User?

Approximately 53% of the respondents have 6 to 10 years of Internet experience. A fifth of the respondents have 11 to 15 years of Internet experience. Another fifth of the respondents have 2 to 5 years of Internet experience. Only 3% of the respondents have 1 year or less of Internet experience.

Location of Use of Internet
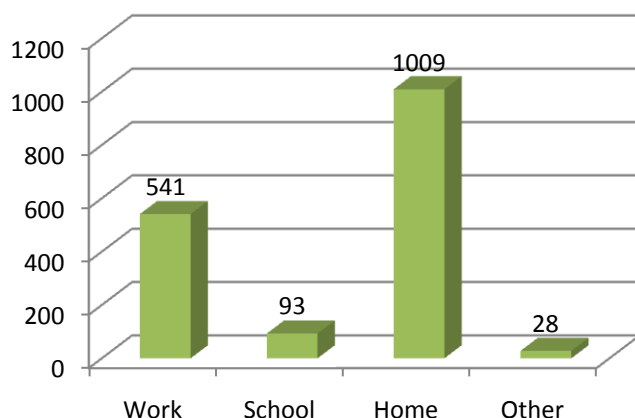
Do you use the Internet, at least once a week, at (a) work (b) school (c) home (d) other?

Almost all the respondents (96%) have Internet access from home. Work is another frequent location of Internet use (52%). 9% of the respondents access the internet from school. 3% of the respondents use the Internet at least once a week at other locations such as the library, another person's home, mobile phones or personal digital assistants (PDA).

Activities on the Internet

Have you ever used the internet to do any of the following?
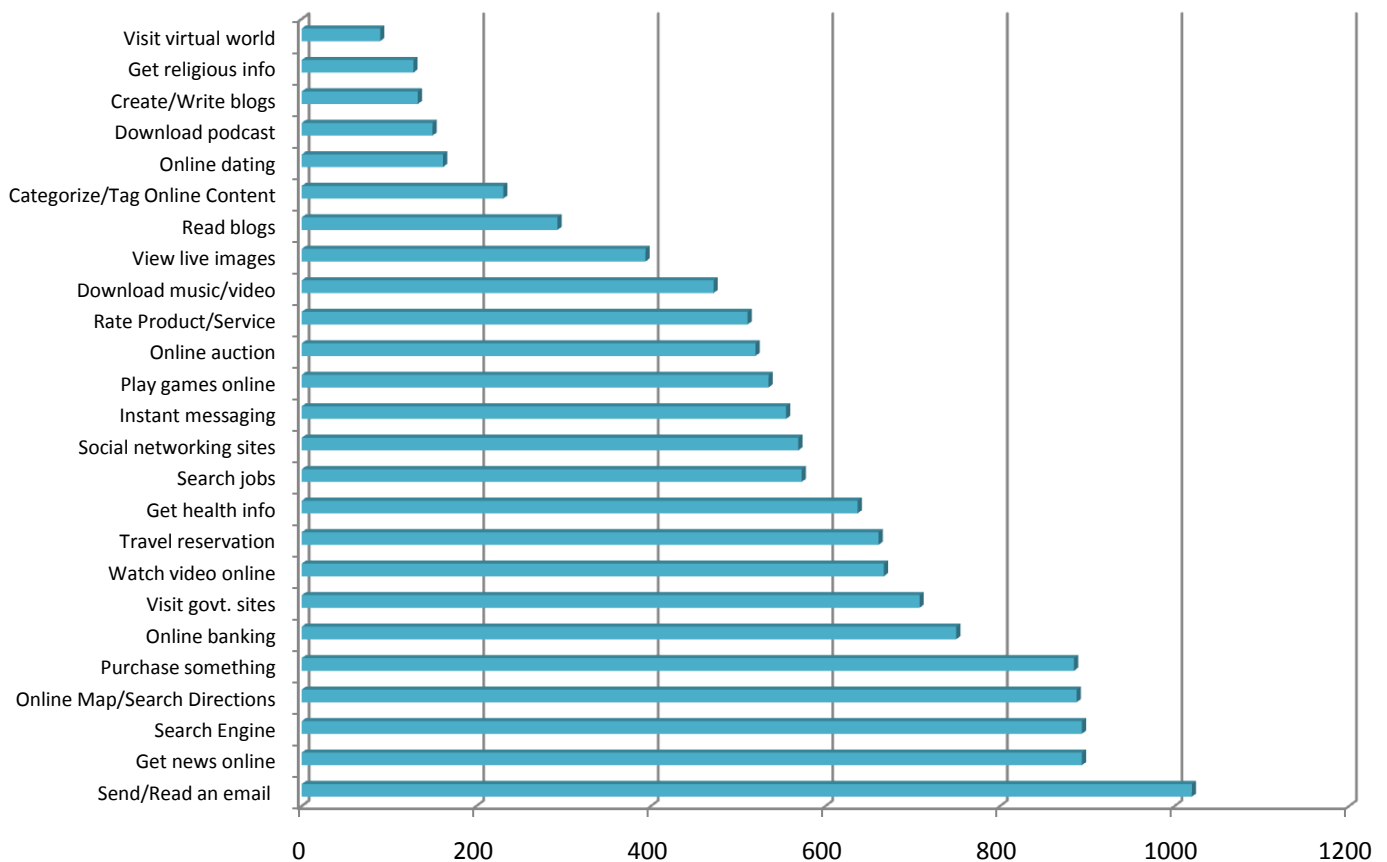

Almost all the respondents (97.3%) have used the Internet to send/read an email. 85.3% have used the Internet to read news online or search for information. 84.4% have utilised the Internet to purchase something. Web blogs are not so prevalent in the Internet activities of our respondents. Only 28% of the respondents have read blogs on the Internet and only 12.7% have created/written blogs of their own.

Most of the respondents have used the Internet for practical activities such as searching for information, travel reservations, online banking, etc. However, leisure and entertainment activities such as downloading music/video, playing games online, reading and creation of blogs are not as common amongst the respondents in their Internet activity patterns.

Experience/Knowledge of Privacy Invasion

Frequency of Privacy Invasion
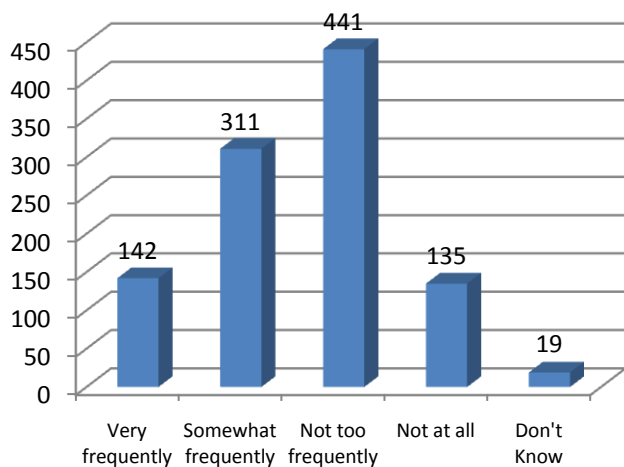
How frequently have you personally been the victim of what you felt was an invasion of privacy (e.g. receiving unsolicited phone calls, unsolicited emails, etc?)

The majority of the respondents (42%) indicated that they experienced an invasion of privacy "not too frequently". 30% experienced privacy invasion "somewhat frequently" and about 14% experienced privacy invasion "very frequently". 13% have not experienced an invasion of privacy at all.

Frequency of Reading/Hearing of news on Invasion of Privacy
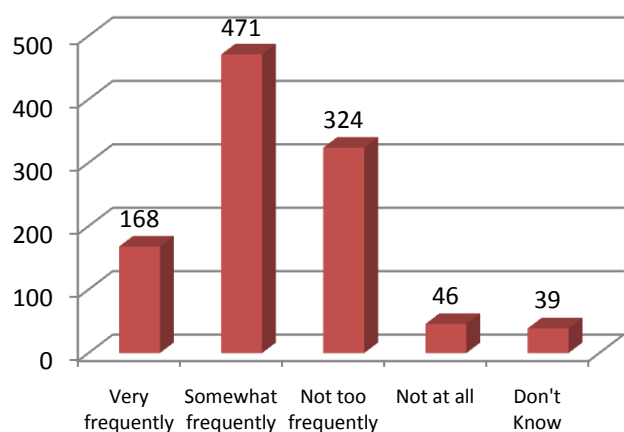
How often have you heard or read during the last year about the use and potential misuse of customers' personal information collected on the Internet?

Although a large proportion of respondents had not personally experienced an invasion of privacy, many had heard or read about the use and potential misuse of customers' personal information collected on the web. 45% indicated that they had heard or read about such incidents "somewhat frequently" and 16% had heard or read about such incidences "very frequently". 31% had heard or read about such incidences "not too frequently" and only 4% had not heard or read about such incidences at all.

**Unauthorised Access to Credit Card Number or other Personal Information**
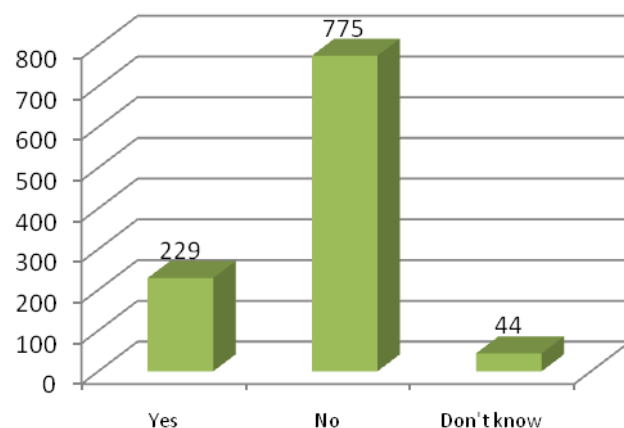
Has anyone ever obtained your credit card details or other personal information and used it without your permission?

The majority (74%) of the respondents have never had their credit card or other personal information used without permission. Only about 22% had suffered the misuse of their credit card or other personal information.

Resources for Internet Use

Types of Internet Connection
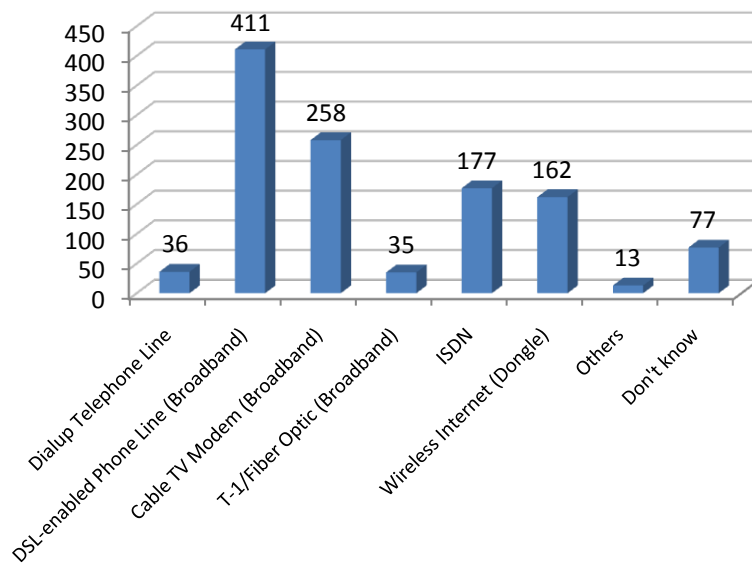
What kind of Internet connection do you have at home?

A DSL-enabled phone line is the most common type of Internet connection among the respondents (39%). Cable TV Modem and ISDN are the next most popular options at 25% and 17% respectively. Other types of Internet connection include mobile broadband.
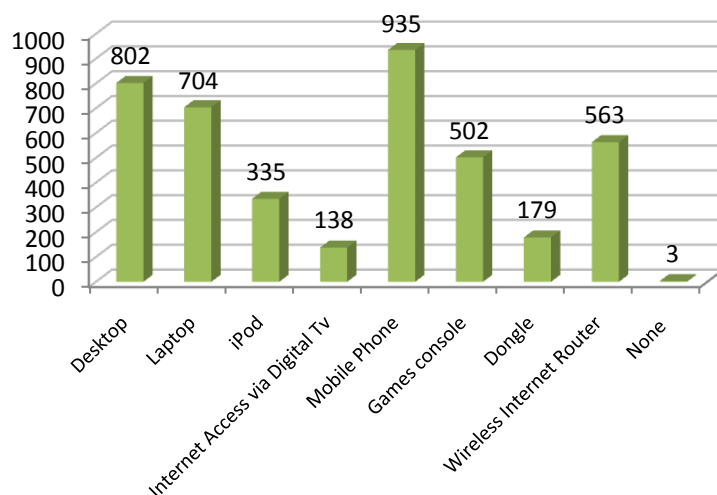
Speed of Internet Access
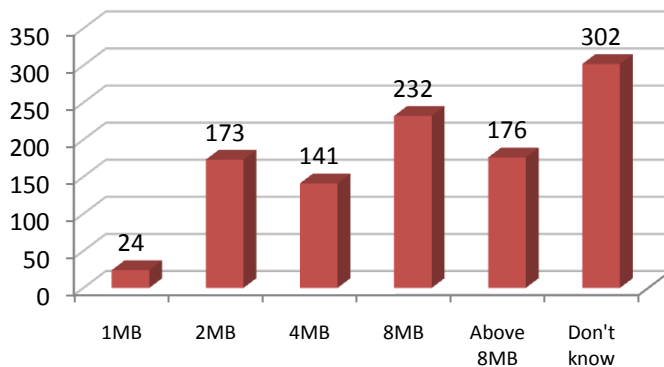
What is the speed of your Internet access?

Many respondents do not know the speed of their Internet access (29%). Only 2% of the respondents indicated that the speed of their Internet access is 1MB.

Types of Technologies Owned

Which of the following technologies do you own?

The respondents have a significant level of technological access. 89% of respondents own a mobile phone. 77% have a desktop, 67% a laptop. 54% are connected to the Internet via a wireless Internet router. Only 3 of the respondents have none of the technologies specified in the survey.

Attitudes towards Privacy

General Concern about Privacy while using the Internet
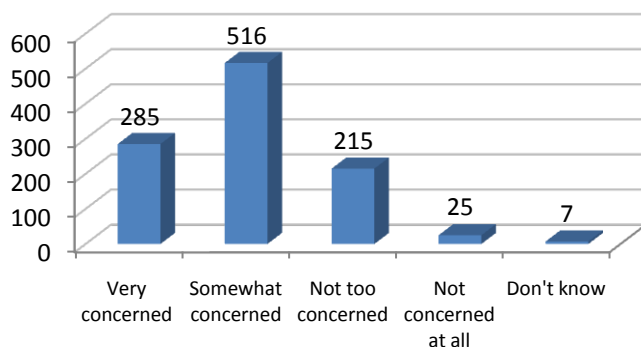
Generally, how concerned are you about your privacy while using the Internet?

27.2% of the respondents indicated that they are "very concerned" about their privacy while using the Internet, while 20.5% stated that they are "not too concerned" about their online privacy. The majority of the sample population (49.2%) indicated that they are "somewhat concerned" about their privacy when using the Internet and only 2.4% are "not concerned at all".
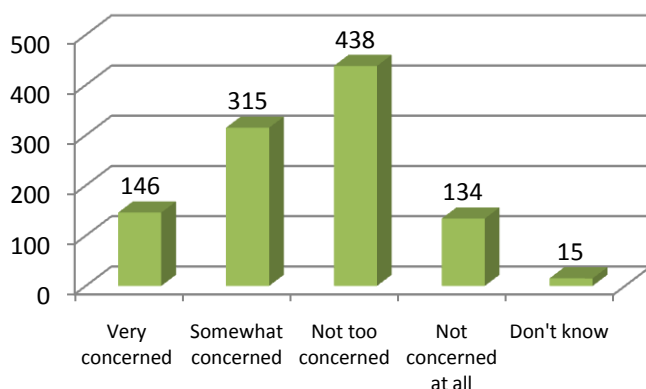
Concern about Personal Information acquired by people whom one does not know
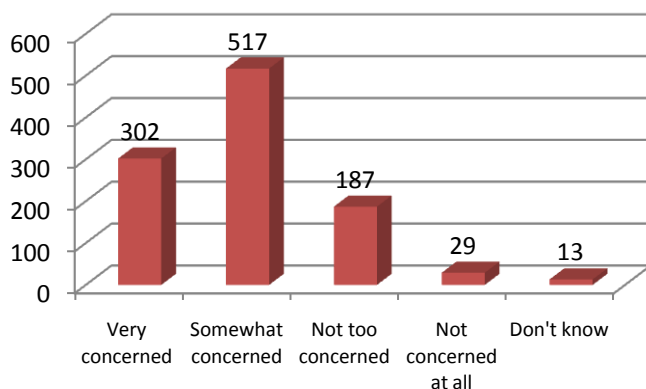
How concerned are you about businesses and people whom you do not know, getting personal information about you and your family?

28.8% of the respondents are "very concerned" about businesses and people whom they do not know acquiring personal information about them. Almost half of the sample population professed to be "somewhat concerned" about their personal information being acquired by businesses or people whom they do not know. Only 2.8% are "not concerned at all".

Concern about Personal Information acquired by friends, family or people whom one does know


How concerned are you about family, friends and people whom you know, getting personal information about you and your web activities?

In contrast, there are lesser concerns about family, friends and people whom one knows acquiring personal information. More than half of the sample population claimed to be "not too concerned" (41.8%) or "not concerned at all" (12.8%).

# Attitudes towards Internet Mechanisms to protect privacy

Attitudes towards Online Privacy Policies
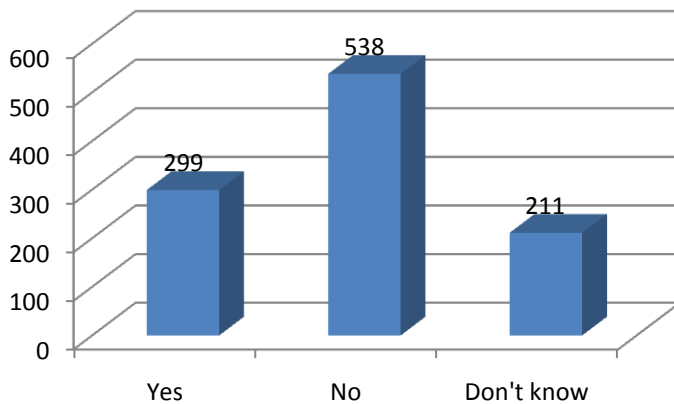
Do you believe that online sites will actually honour privacy policies they have posted?

28.5% of the respondents believe that online sites will honour privacy policies they have posted. Almost twice as many (51.3%) of the respondents do not believe that the privacy policies are actually observed by the online sites.

Attitudes towards Privacy Seals or Third Party Audits of Privacy Policies
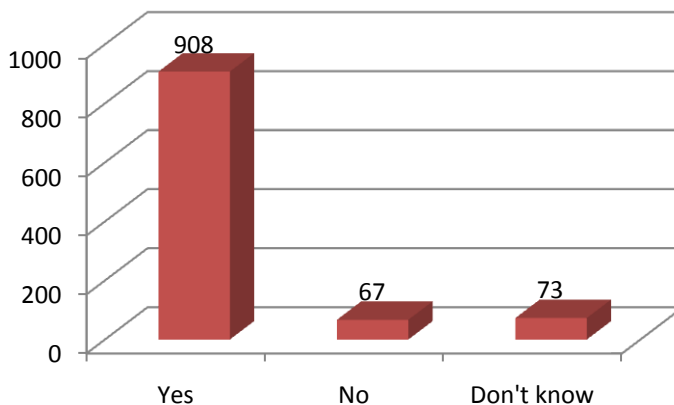
Would you be more comfortable about on-line transactions if the site had a privacy seal or some other demonstration that a third-party audit of its privacy policies has been completed?

86.6% of the respondents expressed more comfort with online transactions if the site has a privacy seal or some other demonstration that a third party audit of privacy policies has been completed.

Attitudes towards Tracking of Web Pages
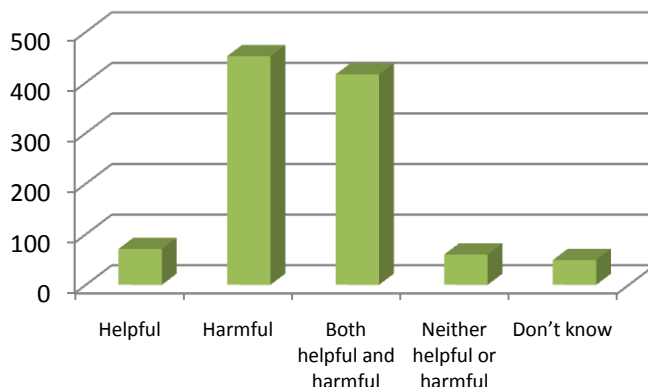
If an online site DID track the web pages you have visited, do you think that would be...

43.1% of the respondents felt that tracking of web pages they have visited is harmful. 39.7% recognise that there may be both benefits and disadvantages to the tracking of web pages they have visited.

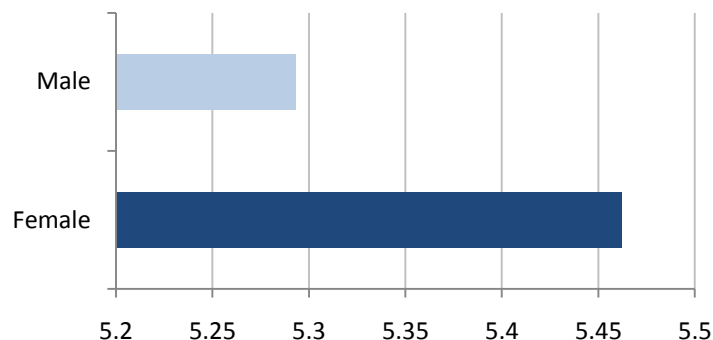## General Concern for Privacy on the Internet

The list below shows the privacy scale used to measure general concern. It is derived from an earlier scale [1]. For each privacy item, the respondents would rate on a scale of 1 to 7, where 1 indicates a *Very Low* cause for privacy concern and 7 indicates a *Very High* cause for privacy concern.

A Ranking of general concerns about Privacy on the Internet
(in descending order of importance)

Types of Concern	Concern Level
1. Online identity theft	6.136
2. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.	6.124
3. People whom I do not know obtaining personal information about me from my online activities.	5.760
4. My credit card being mischarged if I use my credit card to buy something online.	5.751
5. Being asked for too much personal information when I register or make online purchases.	5.599
6. Emails I receive containing a seemingly legitimate internet address that may be fraudulent.	5.583
7. A computer virus sending out emails in my name.	5.578
8. People online not being who they say they are.	5.540
9. The emails I receive not being from whom they say they are.	5.443
10. Online organisations not being who they claim to be.	5.267
11. Unauthorized electronic access to my medical records.	4.944
12. My email being read by someone else besides the person I have sent it to.	4.846
13. Information about me being found on an old computer.	4.819
14. An email that I have sent to someone being inappropriately forwarded to others.	4.768
15. An email I have sent to someone being printed out in a place where others could see it.	4.519

General Concern for Privacy on the Internet by Gender

The graph and tables below show the difference in views about privacy concerns between the genders.

Top 5 General Concern about Privacy on the Internet in Males
N = 523, Mean age = 43.2 years (range: 18 – 82 years, *SD* = 13.9 years)

1. Online identity theft.

2. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.

3. People whom I do not know obtaining personal information about me from my online activities.

4. My credit card being mischarged if I use my credit card to buy something online.

5. A computer virus sending out emails in my name.

Top 5 General Concern about Privacy on the Internet in Females
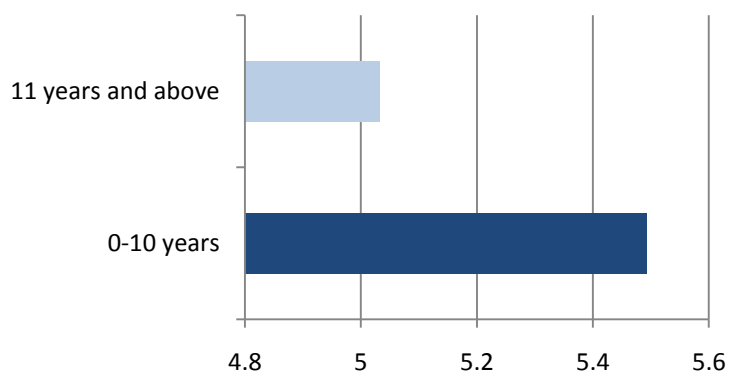N = 525, Mean age = 39.6 years (range: 18 – 75 years, *SD* = 13.8 years)

1. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.

2. Online identity theft.

3. My credit card being mischarged if I use my credit card to buy something online.

4. People whom I do not know obtaining personal information about me from my online activities.

5. Being asked for too much personal information when I register or make online purchases.

Average General Privacy Concern for Causes of Privacy Infringement across Gender

Average General Privacy Concern is calculated by the mean score across 15 items per respondent. Females demonstrate a higher level of general concern about causes of privacy infringement on the Internet as compared to males.

General Concern for Privacy on the Internet by Internet Experience

The graph and tables below show the difference in views about privacy concerns between those with different levels of Internet experience.

Top 5 General Concern about Privacy on the Internet of respondents with 11 years of Internet experience or more
N = 258, Mean age = 43.5 years (range: 19 – 74 years, *SD* = 12.3 years)

1. Online identity theft.
2. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.
3. People whom I do not know obtaining personal information about me from my online activities.
4. My credit card being mischarged if I use my credit card to buy something online.
5. Being asked for too much personal information when I register or make online purchases.

Top 5 General Concern about Privacy on the Internet of respondents with 0-10 years of Internet experience
N = 790, Mean age = 40.7 years (range: 18 – 82 years, *SD* = 14.4 years)

1. Online identity theft.
2. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.
3. People whom I do not know obtaining personal information about me from my online activities.
4. My credit card being mischarged if I use my credit card to buy something online.
5. Emails I receive containing a seemingly legitimate internet address that may be fraudulent.

Average General Privacy Concern for Causes of Privacy Infringement across Levels of Internet Experience

Respondents with more than 10 years of experience as an Internet user display a lower degree of concern about causes of privacy infringement on the Internet, relative to the group of respondents who have 10 or less number of years of Internet experience.

General Concern for Privacy on the Internet by Levels of Education

The overall conclusion from these questions is that the higher the completed education level of the respondents, the higher level of general concern about causes of privacy infringement on the Internet. The analysis below reflects the breakdown of the results related to levels of education and general concern.

Top 5 General Concern about Privacy on the Internet of respondents with at least a university degree
N = 409, Mean age = 41.0 years (range: 18 – 82 years, *SD* = 13.9 years)

1. Online identity theft.

2. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.

3. People whom I do not know obtaining personal information about me from my online activities.

4. My credit card being mischarged if I use my credit card to buy something online.

5. Being asked for too much personal information when I register or make online purchases.

Top 5 General Concern about Privacy on the Internet of respondents without a university education
N = 45, Mean age = 51.2 years (range: 21 – 68 years, *SD* = 12.7 years)

1. Online identity theft.

2. My credit card number being obtained and intercepted by someone else if I use my credit card to buy something online.

3. A computer virus sending out emails in my name.

4. Emails I receive containing a seemingly legitimate internet address that may be fraudulent.

5. My credit card being mischarged if I use my credit card to buy something online.

Internet Users' Information Privacy Concern
(The IUIPC Scale)

Privacy concern can be measured in terms of collection, control and awareness. This is derived from an established measurement scale [2]. For each privacy item, the respondents would rate on a scale of 1 to 7, where 1 indicates "Strongly Disagree" to the statement to 7 indicates "Strongly Agree" to the statement.

Privacy items for Collection:

- *I am concerned when online sites ask me for personal information.*

- *When online sites ask me for personal information, I sometimes think twice before providing it.*

- *I am concerned about giving my personal information to many online sites.*

- *I am concerned when online sites collect personal information about me.*

Privacy items for Control:

- *Online sites should provide me with the right to exercise control and autonomy over decisions about how my information is collected, use and shared.*

- *I believe that online privacy is invaded when control is lost or unwillingly reduced as a result of a marketing transaction.*

Privacy items for Awareness:

- *Online sites seeking information online should disclose the way the data are collected, processed and used.*

- *A good consumer online privacy policy should have clear and understandable disclosure practices.*

- *It is very important to me that I am aware and knowledgeable about how my personal information will be used.*


IUIPC: Collection of Information
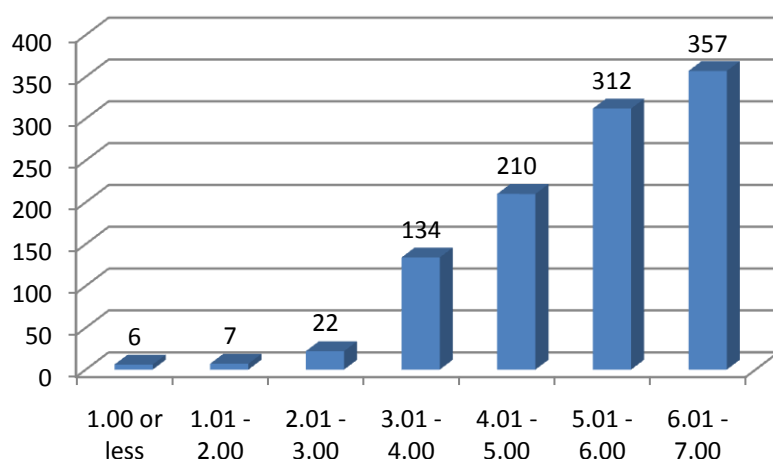
34.1% of the respondents strongly agree that they are concerned when online sites collect their personal information. Only about 16.1% of the respondents disagree that the collection of personal information by online sites is a concern.

IUIPC: Control of Information
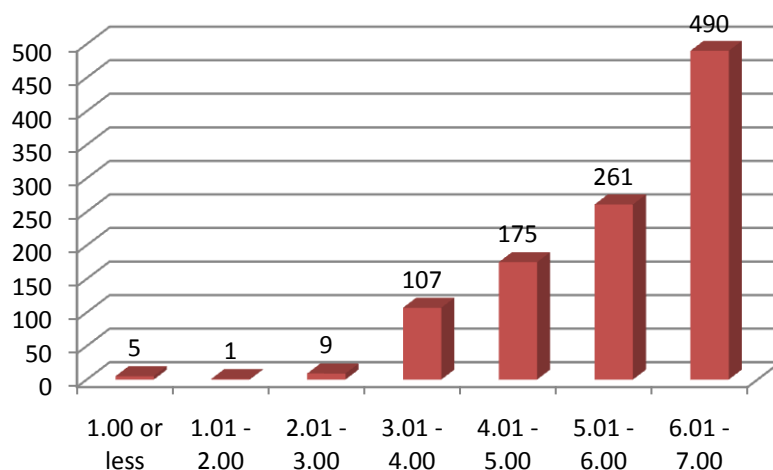
46.8% of the respondents strongly agree that online sites should provide them with the right to exercise control and autonomy over decisions about how their information is collected, use and shared. Only about 11.6% of the respondents disagree that having control over collected information about themselves is a concern.

IUIPC: Awareness of Privacy Practices
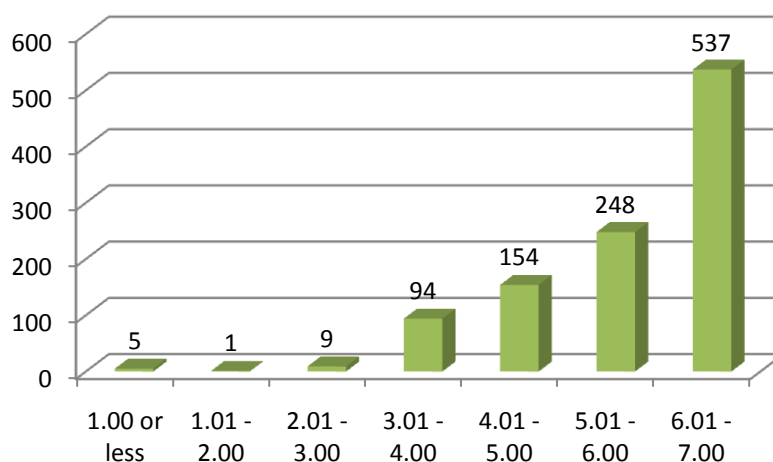
51.2% of the respondents strongly agree that Internet sites seeking information online should disclose the way the data are collected, processed and used. Only about 10.4% feel that having awareness of such privacy practices is not a concern.

IUIPC between Age Groups

Mean level of concern about collection of personal information by online marketers differentiated by age group
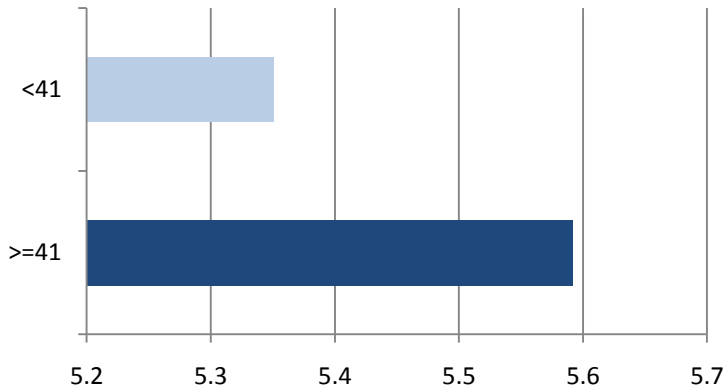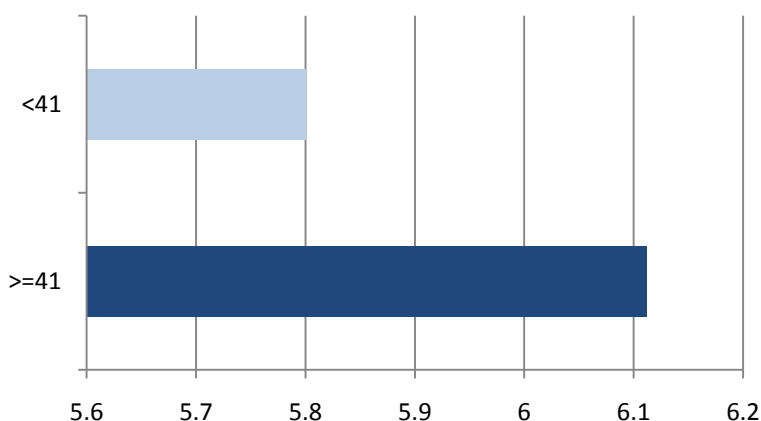

The older the person is, the higher his/her level of concern about collection of personal information practices. Respondents below the age of 41 report a lower degree of concern about collection of personal information by online marketers, compared to respondents aged 41 and above.
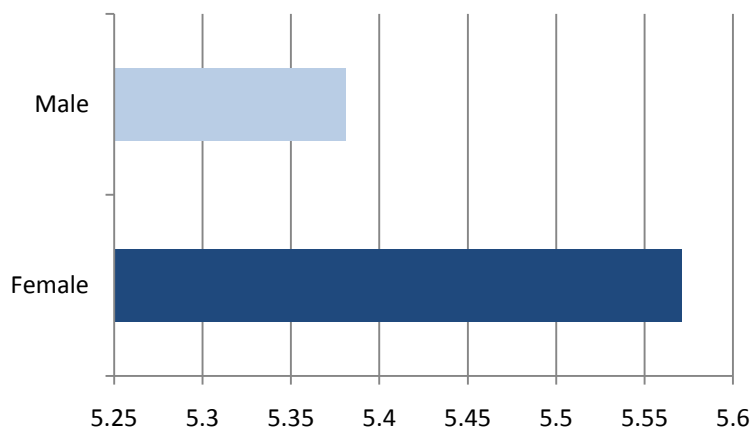
Mean level of concern about control of personal information collected by online marketers differentiated by age group
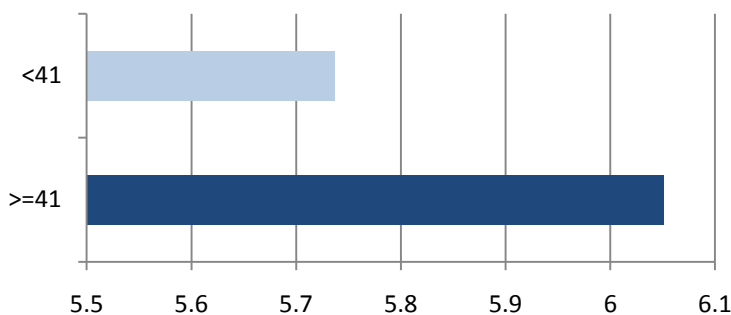
The older the person is, the higher his/her level of concern about control of personal information collected by online marketers. Respondents below the age of 41 have a lower degree of concern about having control over personal information collected by online marketers, as compared to respondents aged 41 and above.

Mean level of concern about awareness of privacy practices online differentiated by age group

The older the person is, the higher his/her level of concern about awareness of privacy practices online. Respondents whose ages are lower than 41 have a lower degree of concern about having awareness of privacy practices online, as compared to respondents aged 41 and above.
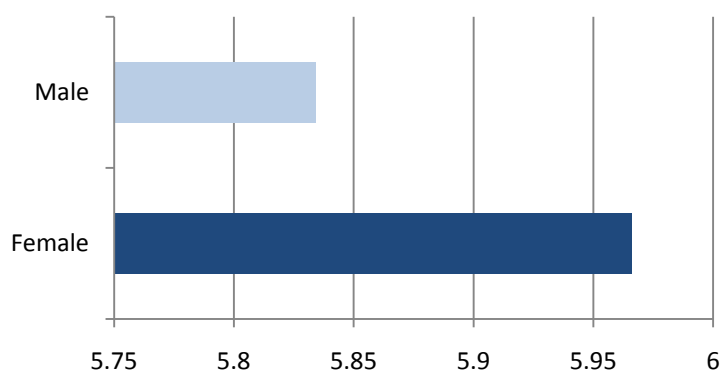
IUIPC between Genders

Mean level of concern about collection of personal information by online marketers grouped by gender


Relative to females, males expressed a lower degree of concern regarding the collection of personal information by online marketers.

Mean level of concern about control of personal information collected by online marketers grouped by gender

Similarly, males expressed a lower degree of concern regarding their control of personal information collected by online marketers, relative to female respondents.

Mean level of concern about awareness of privacy practices online grouped by gender
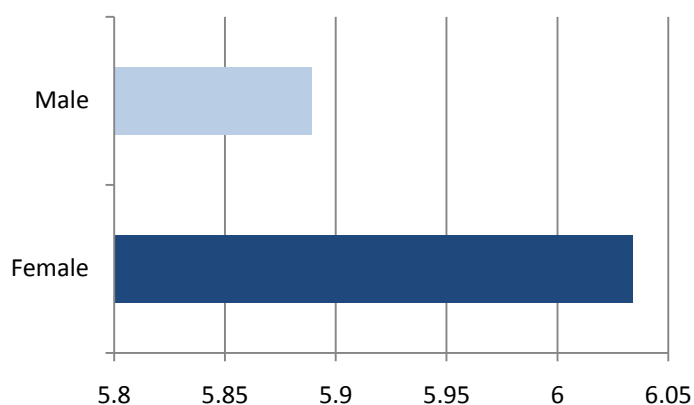
Gender appears to be a significant factor in influencing the degree of concern about awareness of privacy practices online. Males report a lower degree of concern about awareness of privacy practices online than females.

Protecting Privacy on the Internet

In order to examine respondents' behaviour and actions in safeguarding their privacy, we adopted the scale identified in [1]. This scale uses two distinct factors underlining the actions people may take to protect their privacy online. The first factor represents General Caution and reflects protection of privacy based on common sense steps. The second factor, known as Technical Protection of privacy, requires a specific level of technical competency and involves sophisticated use of hardware and software as tools for safeguarding privacy. While everyone can engage in General Caution to protect their online privacy, a higher level of technical knowledge is necessary for Technical Protection.

Participants responded using a 5-point scale for each item, anchored from "Never" to "Always". The items for measurement of General Caution are:
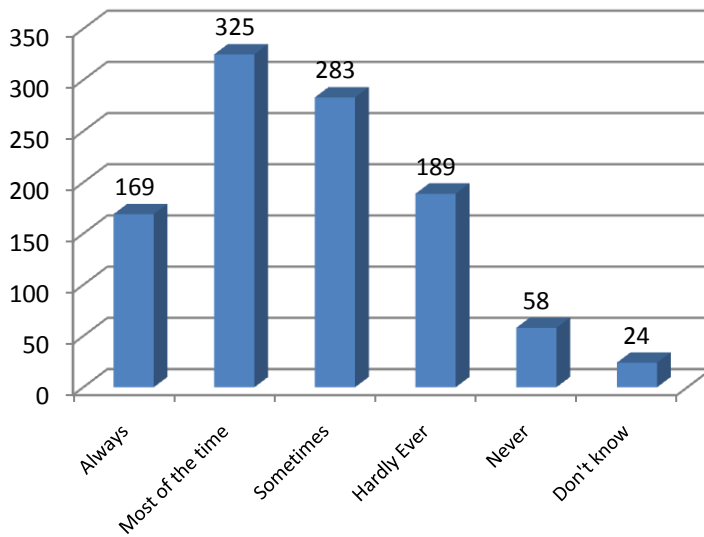
- *How often do you read user agreements and privacy statements before downloading or installing programs or files from the Internet?*

- *How often do you read user agreements and privacy statements before disclosing your personal information for registration to use an online site?*

- *Do you only register for online sites that have a privacy policy?*

- *Do you look for a privacy certification on an online site before you register your information?*

The items for measurement of Technical Protection are:

- *Is your browser set to accept cookies, or not?*

- *Do you check your computer for spyware?*

- *How often do you delete your temporary Internet files and cookies?*

- *How often do you clear your browser history?*

- *Do you watch for ways to control what people send you online? (E.g. check boxes that allow you to opt-in or opt-out of certain newsletters, discounts and other offerings)*
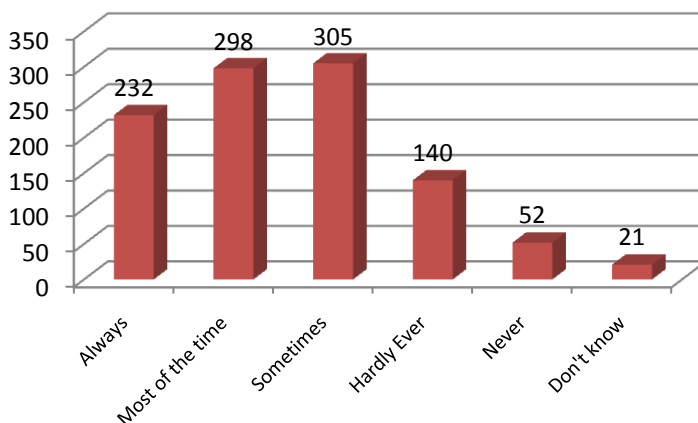
General Caution on the Internet

Reading User Agreements & Privacy Statements before downloading/ installing programs/files from the Internet

How often do you read user agreements and privacy statements before downloading or installing programs or files from the Internet?

Approximately one-third (31.0%) of the respondents indicated that they read user agreements and privacy statements before downloading or installing programs from the Internet "most of the time". 27.0% stated they "sometimes" do so, 18.0% indicated they "hardly ever" do so and only 16.1% reported they "always" do. 5.5% revealed that they have "never" read user agreements and privacy statements before downloading files from the Internet.

User Agreements & Privacy Statements before disclosing personal information for Online Registration

How often do you read user agreements and privacy statements before disclosing your personal information for registration to use an online site?

In contrast to the act of downloading or installing programs or files from the Internet, respondents tend to be more active in reading user agreements and privacy statements before disclosing their personal information for registration to use an online site. 22.1% reported that they "always" read user agreements and privacy statements before disclosing their personal information, 28.4% indicated they do so "most of the time" and 29.1% stated they "sometimes" do so. About 13.6% reported "hardly ever" do and only 5.0% revealed that they have "never" done so.
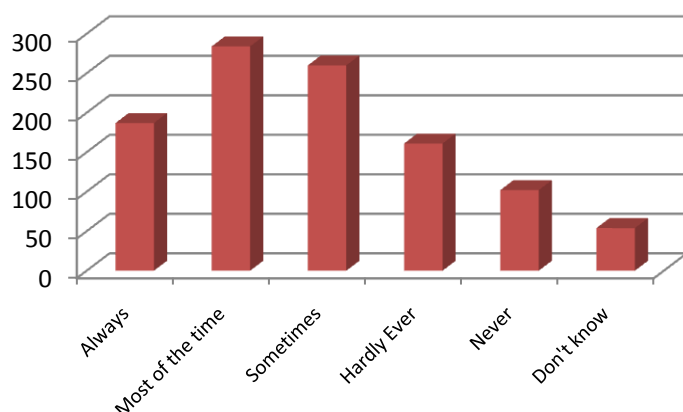
Privacy Policy for Online Sites
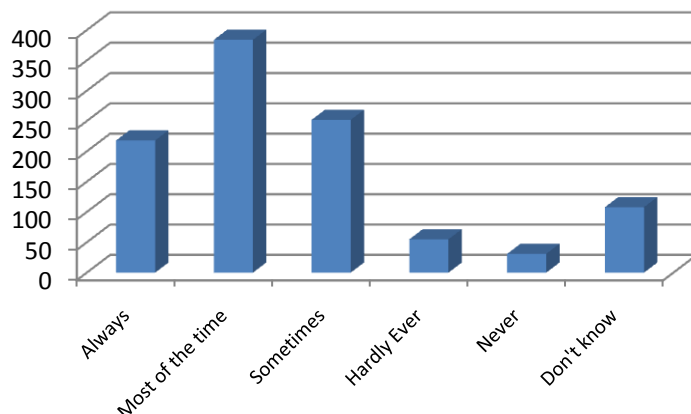
Do you only register for online sites that have a privacy policy?

About a fifth of the respondents (20.8%) reported that they only register for online sites that have a privacy policy. 36.6% indicated they do so "most of the time" and 24.0% stated they "sometimes" do so. Only a small proportion of the sample population disregard the existence of a privacy policy while registering their information with an online site: about 5.2% "hardly ever" look out for a privacy policy and 3.0% have "never" done so.

Privacy Certification on Online Sites

Do you look for a privacy certification on an online site before you register your information?

The presence of a privacy certification on an online site is observed to hold less weight as compared to the privacy policy. 17.8% reported that they always look for privacy certification on an online site before they register their information with it, 27.1% do so "most of the time" and 24.8% "sometimes" do so. 15.4% stated that they "hardly ever" do and 9.7% have "never" done so.

General Caution between Age Groups

% of participants reading user agreements and privacy statements before downloading/installing files from the Internet between age groups
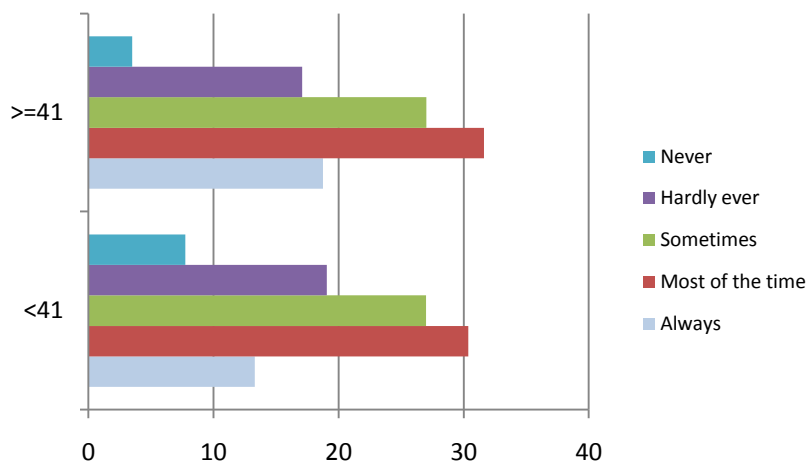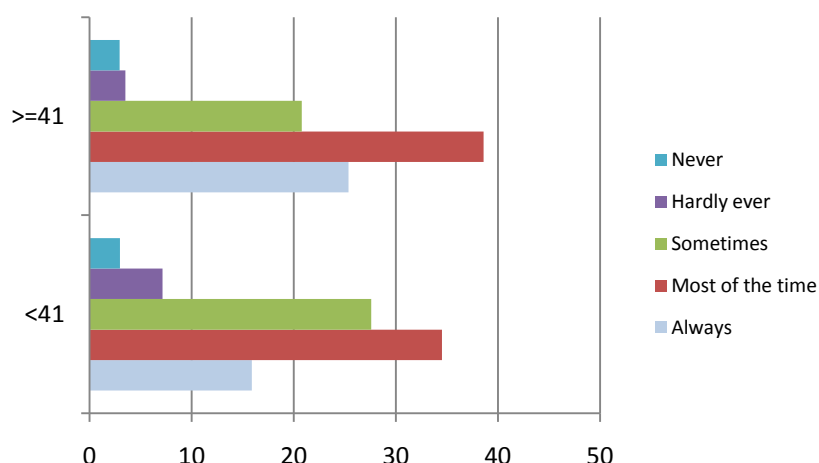

Although the proportions of participants who "hardly ever", "sometimes" or "most of the time" read user agreements and privacy statements before downloading and installing files from the internet are relatively similar in the two groups, there is apparent disparity in the percentage who "never" and "always" do so. For those within the age group of 41 years and above, a higher proportion of the respondents "always" execute this safeguard as compared to those below 41 years. Conversely, there is a lower proportion of respondents who "never" carry out this safeguard within the age group of 41 years and above, relative to their younger counterparts.

% of participants reading user agreements and privacy statements before disclosing personal information for registration to use an online site between different age groups
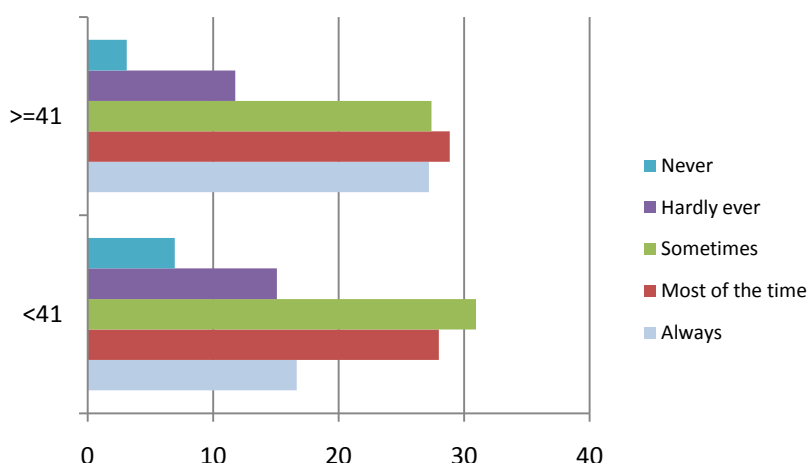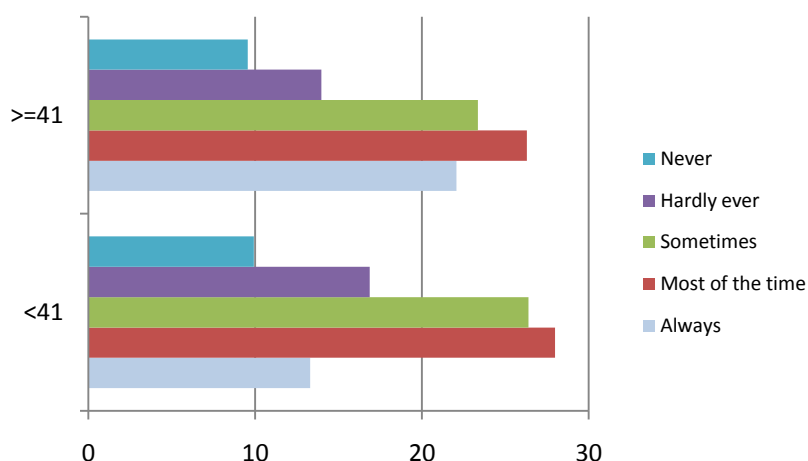

The proportion of participants who "always" read user agreements and privacy statements before disclosing personal information for registration to use an online site is much higher in the older age group of 41 years and above, as compared to the group of below 41 years. Further, the proportion of participants who "never" or "hardly ever" do this is much higher in the younger segment, as compared to their older counterparts.

% of participants only registering for online sites that have a privacy policy between different age groups

The proportion of participants who "always" and "most of the time" only register for online sites that have a privacy policy is much higher in the older age group of 41 years and above, relative to the group of below 41 years. Conversely, the proportion of participants who "never" or "hardly ever" do this is much higher in the younger age group, as compared to their older counterparts.

% of participants looking for a privacy certification on an online site before registering between different age groups

The most discernible difference is observed between the percentages of participants who "always" look for privacy certification on an online site before registering: those who are aged 41 and above have a higher tendency to "always" do so, as compared to those who are below 41 years old.
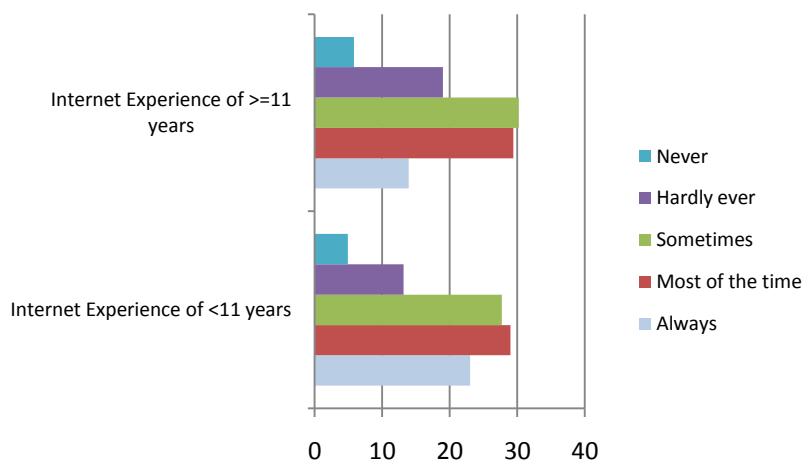
General Caution between Different Levels of Internet Experience

% of participants reading user agreements and privacy statements before downloading/installing files from the Internet between groups with different levels of Internet experience
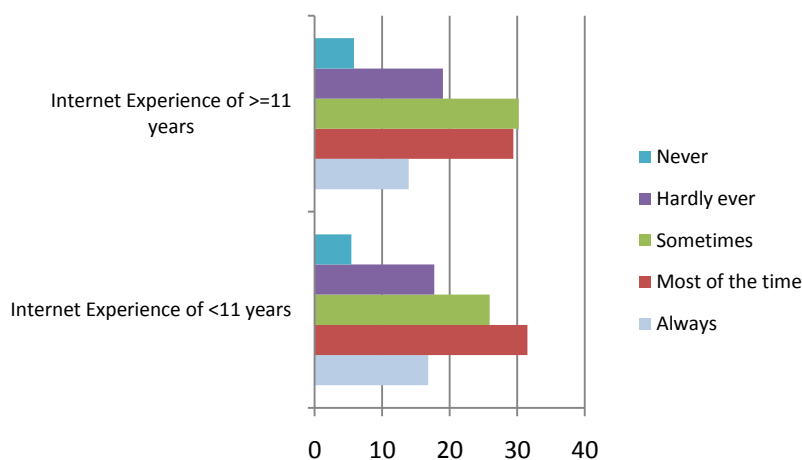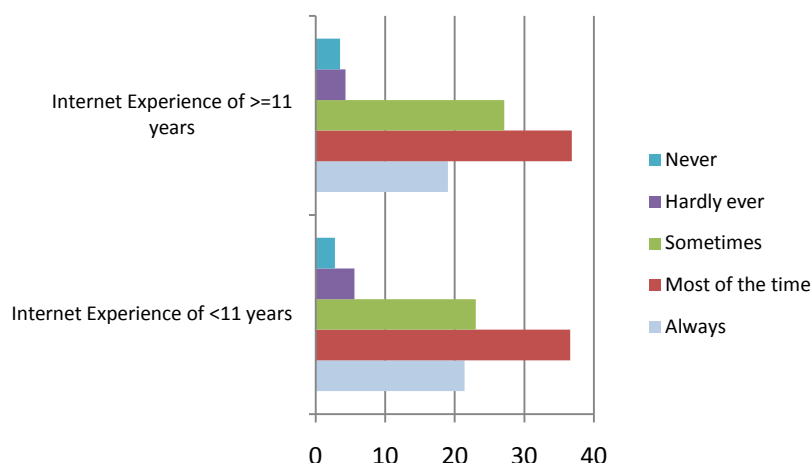

In the segment with Internet experience of less than 11 years, the proportion of participants who "always" and "most of the time" read user agreements and privacy statements before downloading/installing files from the Internet exceeds that of the segment that is equipped with more Internet experience.

% of participants reading user agreements and privacy statements before disclosing personal information for registration to use an online site between groups of different levels of Internet experience


The proportion of participants who "always" read user agreements and privacy statements before disclosing personal information for registration to use an online site is higher in the group with less than 11 years of Internet experience. In addition, the proportion of participants who "never" or "hardly ever" carry out such a safeguard is much higher in the segment with more Internet experience.

% of participants registering for online sites that have a privacy policy between groups with different levels of Internet experience

The difference for this safeguarding action is less discernible between the two groups. The percentage of participants who "always" do so is marginally higher in the segment with a lesser level of Internet experience. However, the proportions of participants who "never" and "hardly ever" carry out such safeguards are low in both segments.

% of participants looking for a privacy certification on an online site before registering between groups of different levels of Internet experience
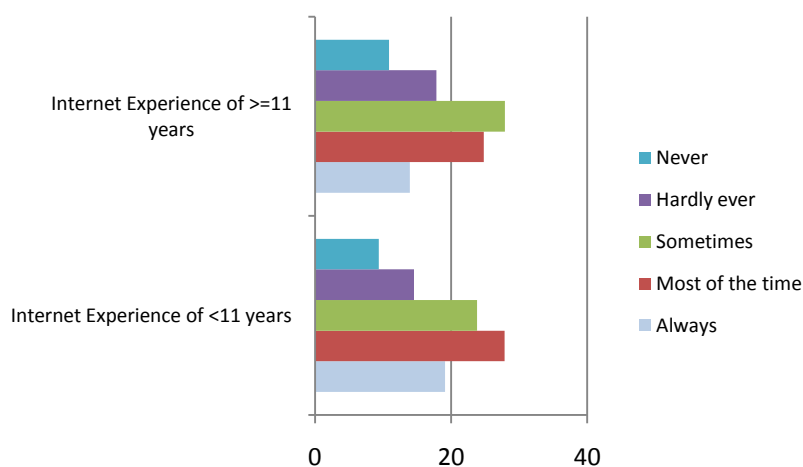
Those with a higher level of Internet experience seem less likely to look for a privacy certification on an online site, as the percentage of those who "never" and "hardly ever" do so is higher than that in the segment with 10 years or less of Internet experience. Also, the proportion of more experienced Internet users who "always" or "most of the time" do so is much lower than that of the less experienced Internet users.

General Caution between Different Levels of Internet Experience

% of participants reading user agreements and privacy statements before downloading/installing files from the Internet between groups with different levels of education
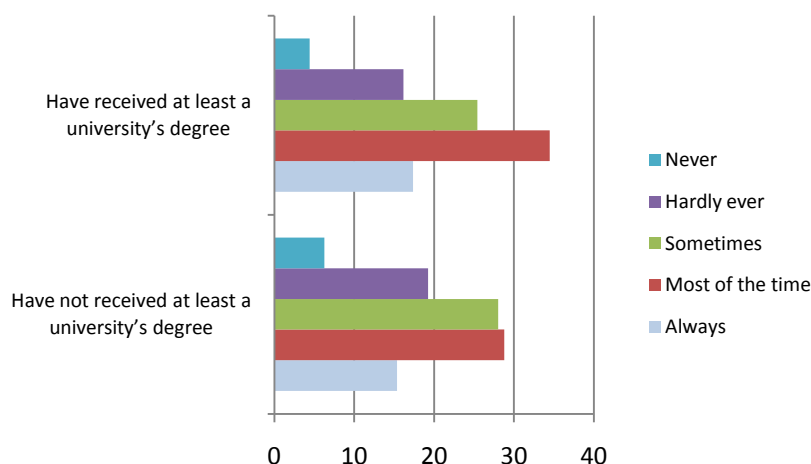
The proportion of participants with at least a university degree who "always" and "most of the time" read user agreements and privacy statements before downloading and installing files from the Internet is higher than for those who have not received a university education. A higher percentage of those who have not received a university degree "never" and "hardly ever" do so, as compared to the percentages for those with a university degree.

% of participants reading user agreements and privacy statements before disclosing personal information for registration to use an online site between groups with different levels of education
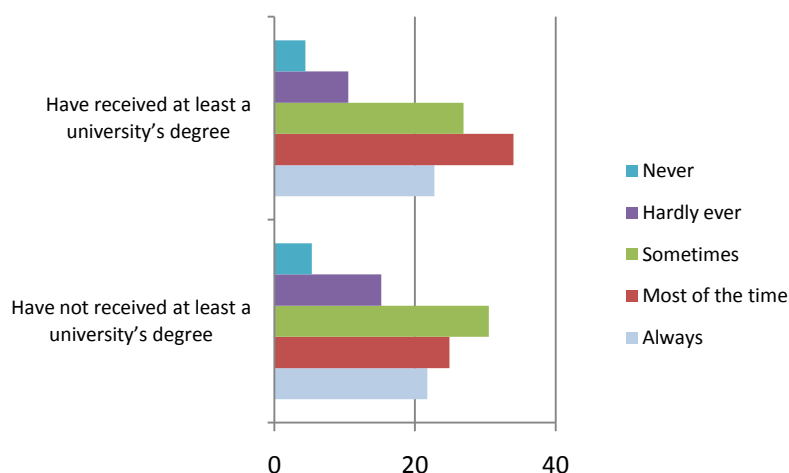
Those who have completed higher education seem to be more active in reading user agreements and privacy statements before disclosing personal information for registration to use an online site, as the proportion that "always" and "most of the time" do so is higher than for those who do not have a university degree. In addition, there is a smaller proportion of the segment that have completed higher education that "never" or "hardly ever" does so.

General Caution between Groups with Different Levels of Education

% of participants only registering for online sites that have a privacy policy between groups with different levels of education
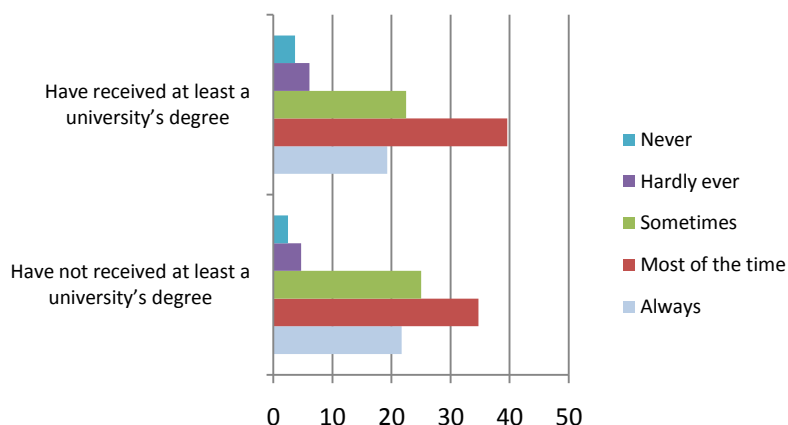
Similar to the comparison earlier, the disparities for this safeguarding action is less discernible between the two groups. The percentage of participants who "most of the time" only register for online sites that have a privacy policy is higher in the segment with higher education. However, the proportions of participants who "never" and "hardly" ever carry out such safeguards are low in both segments

% of participants looking for a privacy certification on an online site before registering between groups with different levels of education
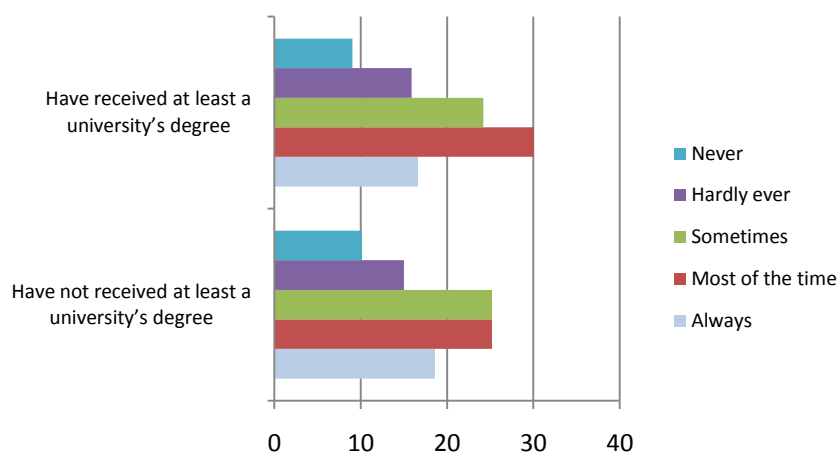
The differences between the two segments are slight. The only noticeable difference is the proportion that looks for a privacy certification on an online site before registering their personal information "most of the time" – a higher proportion of those with a university education do so, as compared to those without.

Technical Protection on the Internet

Browser Cookie Settings
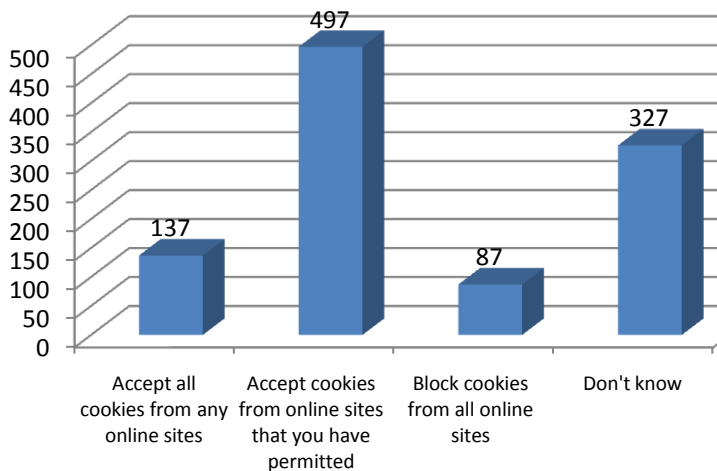
Is your browser set to accept cookies, or not?

Prior to this question, respondents were asked if they knew what an Internet "cookie" was. 76.3% of the participants answered "yes" and 21.2% answered "no". 13.1% of the respondents have set their browsers to accept all cookies from any online sites. The majority of the participants (47.4%) have their browsers set to accept cookies from online sites that they have permitted. Only 8.3% have adjusted their browsers to block cookies from all online sites.
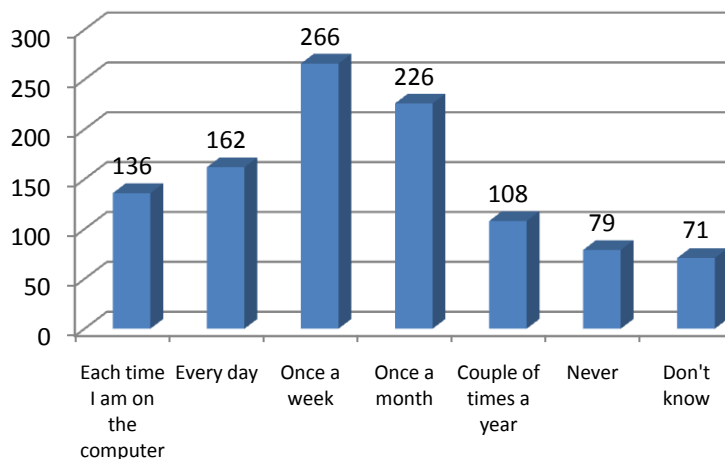
Checks for Spyware in Computer
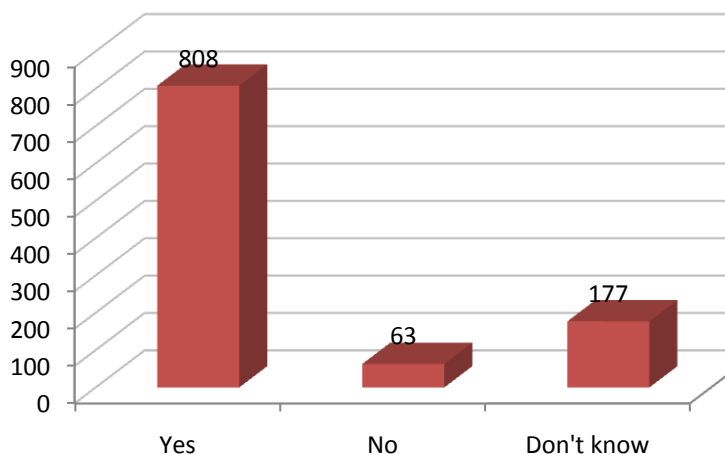
Do you check your computer for spyware?

Subjects were asked if they knew what "spyware" was before the above question. 85.0% of the participants answered "yes" and 12.6% answered "no". 77.1% of the participants check their computers for spyware and only 6.0% do not check their computers for spyware.

Deletion of Temporary Internet Files & Cookies

How often do you delete your temporary Internet files and cookies?

13.0% of the respondents delete their temporary Internet files and cookies each time they are on the computer. 15.5% do so every day. About a quarter of the sample population do so once a week (25.4%). 21.6% do so on a monthly basis and 10.3% do so a couple of times a year.

Clearing of Browser History
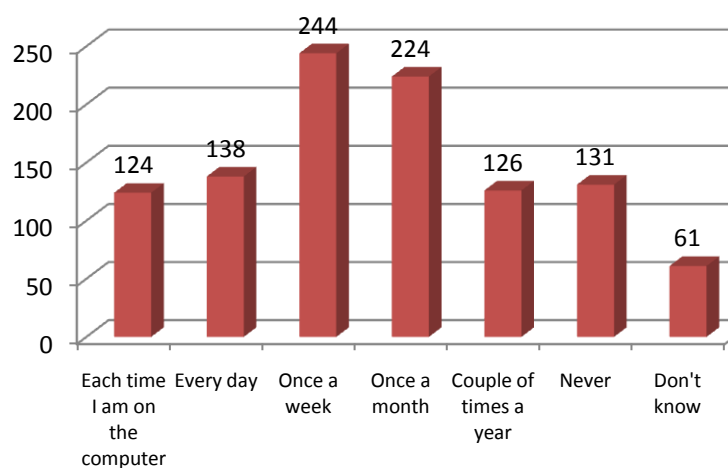
How often do you clear your browser history?
11.8% of the respondents clear their browser history each time they are on the computer. 13.2% do so on a daily basis, 23.3% do so on a weekly basis and 21.4% do so on a monthly basis. 12.0% clear their browser history a couple of times a year and 12.5% have never cleared it.

## Ways to Control What People Send You Online
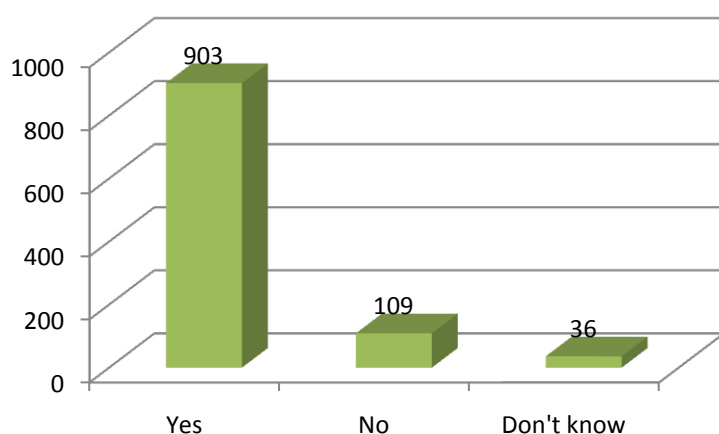
Do you watch for ways to control what people send you online? (E.g. check boxes that allow you to opt-in or opt-out of certain newsletters, discounts and other offerings)

86.2% of the participants watch for ways to control what people send them online and only 10.4% do not.
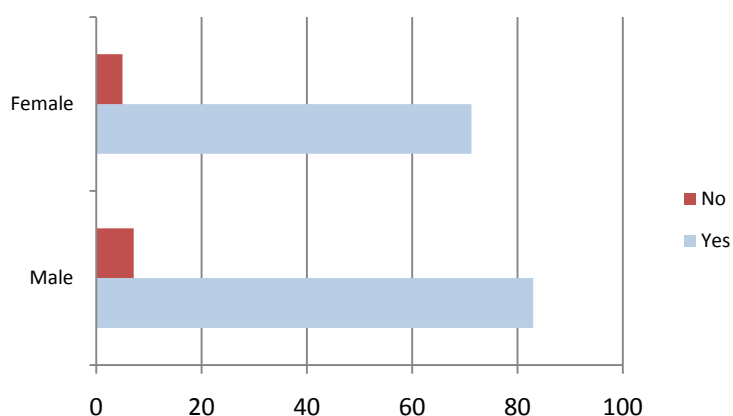
Technical Protection between Genders

**Levels of cookie settings between genders**
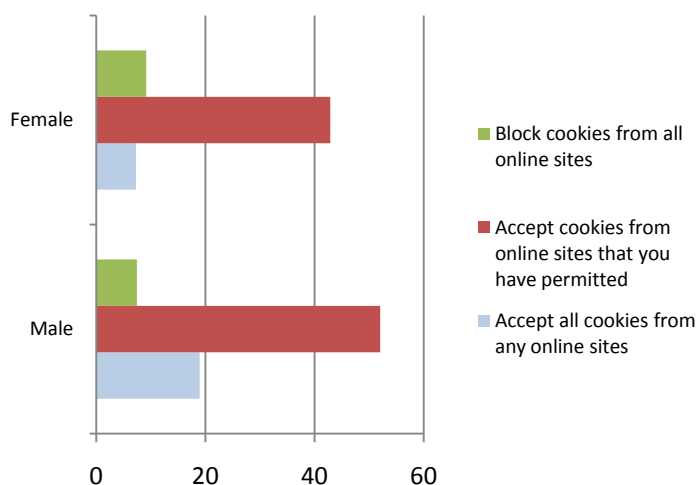
The percentage of females who "accept all cookies from any online sites" is lower than that of males who display this behaviour, but the percentage of females who "block cookies from all online sites" is higher than that of males.

% who check for spyware between genders

There is a higher percentage of male respondents who check for spyware in their computer, as compared to females. However, there is also a marginally higher percentage of male respondents who do not do so, as compared to females.

Frequency of deletion of temporary Internet files and cookies between genders
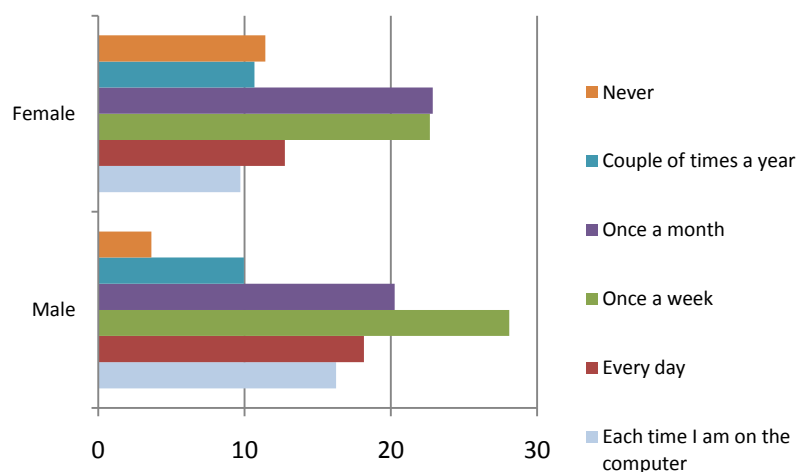

Males are more likely to delete temporary Internet files and cookies. The percentage of male respondents deleting their temporary Internet files and cookies "each time I am on the computer", "every day" and "once a week" exceeds that of the female segment. The proportion of respondents who "never" do so is much higher in the female respondents, as compared to the males.

Frequency of clearing of browser history between genders
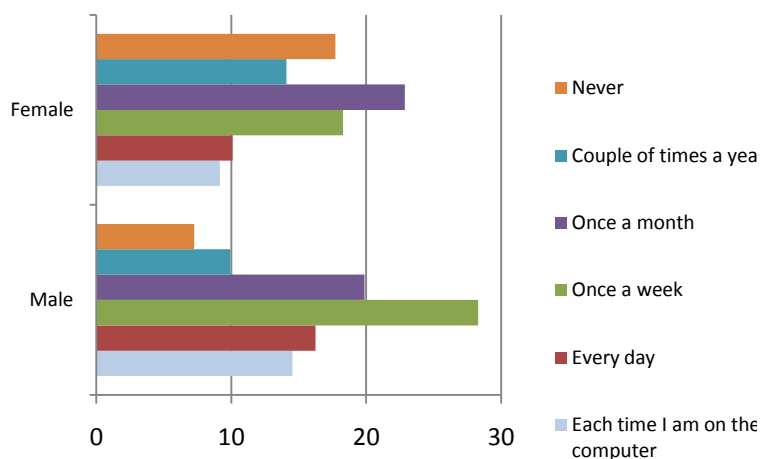
The figures show that males clear their browser history more frequently than females. The percentage of males clearing their browser history "each time I am on the computer", "everyday" and "once a week" is higher than that of the female respondents. Also, the percentage of females "never" clearing their browser history or doing so a "couple of times a year" exceeds that of the males.

% who watch out for ways to control what people send them online between genders
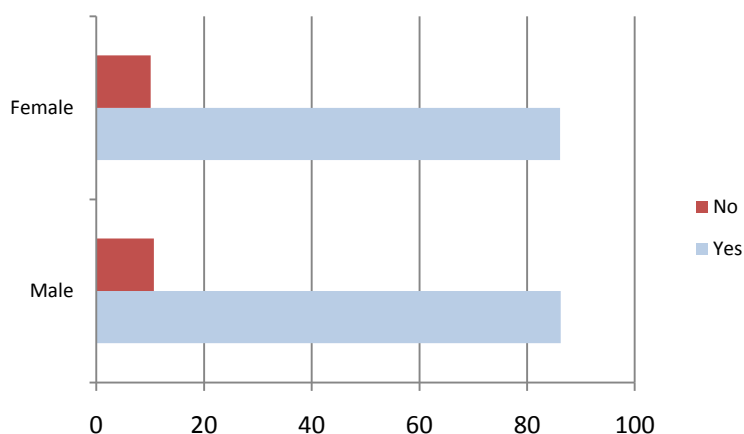
Both genders present similar behaviour when watching out for ways to control what people send them online. The majority (>80%) do watch out for ways to control what they receive from people online.

Technical Protection between Ethnic Groups

We have adopted the typical measurement for ethnicity used in large scale government surveys. The measurement tool includes the following categories: nationality, skin colour, and racial group. Although our sample of non-whites is relatively small, the following consistent pattern relative to skin colour emerges throughout all our findings. Further qualitative research will need to be conducted to evaluate this pattern further:

- A higher percentage of the non-white respondents set their browsers to "accept all cookies from any online sites", as compared to the white respondents.

- A higher proportion of non-white participants checks for spyware, and a lower proportion does not, as compared to their white counterparts.

- Although the white respondents indicated a lower response in deletion of temporary Internet files and cookies "each time I am on the computer", relative to non-whites, the percentage of white respondents who do so "every day" and "once a week" exceeds that of the non-white segment.

- The proportion of whites "never" clearing their browser history or doing so "once a week" exceeds that of the non-whites.

- A greater number of non-white participants watch out for ways to control what people send them online, as compared to their white counterparts.

Methodology

The questionnaire was administered via an online platform known as ConfirmIT provided by UK online. Set up by the UK government in 1999 to provide public access to computers, the UK online centres network plays a key role in exploiting information technology to help improve individual lives, strengthen communities and achieve social inclusion. Hitherto, UK online centres have engaged more than 2 million people a year.

UK online centres have specifically created an online research panel known as "myopinion" where centre users are offered the opportunity to participate and complete surveys which may be relevant to them. There are currently 5000 members on the panel. Leveraging on this facility, the invitation to complete the online survey was disseminated via email to the UK online's myopinion and consumer panel databases, offering an incentive to win the lottery for £100 worth of high street vouchers. A total of 7,542 emails were sent out to solicit participation for the online survey. 1578 responded to the email invitation and participated in the survey, amounting to a response rate of 20.9%. Within the 1578 responses, 530 of the questionnaires were incomplete and had to be discarded.

The total number of valid responses is 1048. Of the 1048 respondents, 49.8% (523) were male and 50.2% (525) were female. The mean age of the sample was 41.0 years (range: 18 – 82 years, *SD* = 14.0 years). The mean number of years that the sample population has in terms of experience as an Internet user is 8.9 years (range: 0 – 30 years, *SD* = 4.2 years). The majority of the sample population access the Internet from a computer at home (96%). 51.6% reported the use of Internet from a computer at work and only 8.9% reported the use of Internet from a computer at school. Other common sites of Internet access include mobile phones, churches, libraries, and Internet cafes.

The privacy scale used to measure General Concern and Privacy Protection Behaviour is adopted from Buchanan et al. (2007) that contains attitudinal measures to reflect general concerns about privacy on the Internet.

The privacy scale used to measure privacy concerns of an Internet user is adopted from Malhotra et al. (2004). Their scale conceptualises IUIPC as "*the degree to which an Internet user is concerned about online marketers' collection of personal information, the user's control over the collected information and the user's awareness of how the collected*

information is used" and characterises IUIPC in terms of three factors – namely, collection, control and awareness of privacy practices. The collection factor looks into the central theme of equitable information exchange based on the agreed social contract. The control dimension represents the freedom to voice an opinion or exit. The awareness factor denotes comprehension about established conditions and actual practices.

References

1.   Buchanan, Tom, Ulf-Dietrich Reips, Carina Paine and Adam N. Joinson, (2007) "Development of measures of online privacy concern and protection for use on the Internet." Journal of the American Society for Information Science and Technology, Vol. 58, Issue 2, pp. 157 – 165

2.   Malhotra, N. K., Kim, S. S., and Agarwal, J. (2004), "Internet users' information privacy concerns (IUIPC): The construct, the scale and a causal model," Information Systems Research, 15, pp. 336-355.

Acknowledgement

Contact VOME

Information Security Group
Royal Holloway, Egham
TW20 0EX

Claire Hudson
Project Co-ordinator
Email: claire.hudson@rhul.ac.uk

Visualisation & other Methods of Expression

http://www.vome.org.uk