Report on
Privacy Awareness Survey on Smartphones and Smartphone Apps

Submitted to

Office of the Privacy Commissioner for Personal Data

By
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Hong Kong Baptist University

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Executive summary

Background

The Office of the Privacy Commissioner for Personal Data (PCPD) commissioned the Centre for the Advancement of Social Science Research of the Hong Kong Baptist University (CASR) to conduct a telephone survey on the usage habit (particularly their awareness on personal data privacy protection) of smartphones users in Hong Kong.

Survey Method

Prior to the survey, CASR conducted a focus group discussion on 21 June 2012 for randomly invited smartphone users aged 18 or above in order to find out their experience in using smartphones and their awareness of the privacy risk and security associated with using smartphones. The results from the focus group discussion helped the development of the questionnaire in the survey.

The survey was held between 19 July 2012 and 29 July 2012 for smartphone users aged between 15 and 70. In total 1013 respondents using smartphones were successfully interviewed. Given nearly 83% (838 respondents) of those surveyed were using either Android or iPhone smartphones, the results and analysis concentrated on the usage habits of those 838 respondents.

General Findings

Demographic distribution by gender:

Male:	47.6%	(399 respondents)
Female:	52.4%	(439 respondents)

- The figures suggest that the use of smartphones was evenly distributed across the two genders in the survey.

Demographic distribution by age (based on those who answered):

Aged 15-20:	22.1%	(185 respondents)
Aged 21-30:	20.9%	(175 respondents)
Aged 31-40:	21.1%	(177 respondents)
Aged 41-50:	23.0%	(193 respondents)
Aged 51-60:	9.7%	(81 respondents)
Aged 61 or above:	2.1%	(18 respondents)
Refused to disclose:	1.0%	(9 respondents)

- The figures suggest a heavier use of smartphone by the youths, particular the five-year age group from 15 to 20 years old.

Smartphone types:

iPhone:	36.5% (306 respondents)
Android[1]:	63.5% (532 respondents)

- The figures suggest a more popular use of Android phone than iPhone.

[1] Including respondents using Samsung, HTC, LG, Motorola, Sony, or other brands that run the Android operating system

Number of years using smartphones (not necessarily the current model):

Less than one year:	21.6% (181 respondents)
1 – 2 years:	43.6% (365 respondents)
3 – 4 years:	22.9% (192 respondents)
5 – 6 years:	6.4% (54 respondents)
7 – 8 years:	1.1% (9 respondents)
9 – 10 years:	0.8% (7 respondents)
More than 10 years:	3.6% (30 respondents)

- The findings suggest that the majority of respondents (more than 65%) have used smartphones for less than two years.

Major use of smartphone:

Text communications with friend (Facebook, Whatsapp):	66.7% (559 respondents)
Making phone calls:	52.9% (443 respondents)
Web surfing	36.0% (302 respondents)

- The findings suggest that text-based communications has overtaken voice as the primary use of smartphones.

Factors to be considered by respondents when purchasing smartphone:

Functionality of the smartphones:	84.7% (710 respondents)
Price:	77.4% (649 respondents)
Outlook:	65.0% (545 respondents)
Brand popularity:	56.2% (471 respondents)
Repair/Warranty service:	45.2% (379 respondents)
Risk of privacy intrusion:	22.9% (192 respondents)

- The findings suggest that privacy protection is the least important factor considered by smartphone buyers.

Findings Related to Mobile Apps

Number of respondents installing mobile apps:

Overall:	93.6% (784 out of 838 respondents)
Aged 15 - 20:	95.1% (176 out of 185 respondents)
Aged 21 - 30:	98.9% (173 out of 175 respondents)
Aged 31 - 40:	94.4% (167 out of 177 respondents)
Aged 41 - 50:	89.6% (173 out of 193 respondents)
Aged 51 - 60:	88.9% (72 out of 81 respondents)
Aged 61 or above:	83.3% (15 out of 18 respondents)

- The findings suggest that the younger generation is more ready to install apps to their smartphones.

*9 respondents did not reveal their age.

Popular mobile apps:

Most popular app – Whatsapp	59.7% (500 respondents)
Second most popular app – Facebook	29.4% (246 respondents)

- The findings suggest that social networks are the most popular mobile apps.

Keeping tab on mobile apps:

Those who did not know how many apps they have downloaded/installed:	40.9% (343 respondents)
Those who did not periodically check their installed apps and delete unused ones:	21.4% (179 respondents)
Those in the age group 51 – 60 who had not periodically checked their installed apps and delete unused ones:	41.7% (30 out of 72 respondents)

- The findings suggest that the older generation is less likely to check their installed apps and delete unused ones.

Mobile app access:

Those who did not know or were not sure what information their apps had access to:	56.8% (476 respondents)
Those Android users who did not know what information their apps had access to:	53.6% (288 out of 532 respondents)
Those iPhone users who did not know what information their apps had access to:	62.4% (194 out of 306 respondents)

- The findings suggest that iPhone users need to pay more attention to what information their apps have access to.

Considerations before installing apps:

Those who would consider privacy policy of an app before installing it:	26.8% (225 respondents)
Those who were not aware that their contact lists might be uploaded to a central server when using social network apps:	51.4% (431 respondents)
Those iPhone users who were not aware that their contact lists might be uploaded to a central server when using social network apps:	56.5% (173 out of 306 respondents)
Those who were in the 15 – 20 age group who were not aware that their contact lists might be uploaded to a central server when using social network apps:	58.4% (108 out of 185 respondents)
Those who has used smartphone for less than two years who were not aware that their contact lists might be uploaded to a central server when using social network apps:	56.0% (306 out of 546 respondents)
Those who did not know apps might secretly access information they had not said they would:	70.3% (589 respondents)

- The findings suggest that users' general awareness of what information their mobile apps could access is not high. The awareness levels of iPhone users, users with less than 2 years of use and youths between 15 – 20 are weaker when compared with other groups.

Privacy protection when using smartphones

Smartphone security:

Those who had taken no step to protect information on their smartphones (enabled screen lock, installed anti-virus/anti-theft software, etc):	47.1% (395 respondents)
Those Android[2] user who had not installed anti-virus to protect their smartphone	56.2% (154 out of 274 respondents)
Those who had not used auto screen lock to protect their smartphones	60.2% (505 respondents)
Those who had not installed anti-theft software to protect their smartphones	89.6% (751 respondents)
Those who used encryption to protect personal information stored in their smartphone	13.2% (111 respondents)
Those who were not worried about data leakage when using smartphones or installing apps	50.2% (421 respondents)
Those who were in the 15 – 20 age group who were not worried about data leakage when using smartphones or installing apps	61.1% (113 out of 185 respondents)

- The findings suggest that the awareness of smartphone security and potential on data leakage from smartphones were not high. Youths between 15 – 20 group are the weaker group in this respect.

[2] Apple does not allow anti-virus software to be placed in App Store as it believes iOS and how it controls iOS apps makes iOS secured against virus.

Conclusions

On the global basis, Hong Kong is probably one of the cities with the highest smartphone penetration rates. Given the use of smartphones has shifted from voice-based communication to text-based communication, more personal data is likely to be stored in them.

This smartphone survey provides a general picture on the use of smartphones by Hong Kong residents and their awareness of personal data protection pitfalls. It shows that the privacy protection awareness of the following areas could be improved upon:

1. Users should find out more about what information stored in the smartphone a mobile app will access before installing it;
2. The youth group (aged 15 – 20), who are one of the more active groups of mobile app users, need to pay more attention to what mobile apps they have installed, what access these apps have and review them often;
3. iPhone users need to be aware of iPhone's design characteristics that it will not show comprehensively the type of information an app would need to access prior to, during and after the installation process.

I. BACKGROUND

In order to understand the usage of smartphones and the personal data privacy awareness by smartphone users, the Office of the Privacy Commissioner for Personal Data (PCPD) conducted a survey among smartphone users in Hong Kong. The Centre for the Advancement of Social Sciences Research (CASR) in the Faculty of Social Sciences of Hong Kong Baptist University was commissioned by PCPD to conduct this survey.

II. SURVEY OBJECTIVES

This survey aims at collecting data in order to:

1. understand the usage of smartphones and the personal data privacy awareness by smartphone users;
2. provide background information to help address the personal data protection issues created by the use of smartphones;
3. provide background information to facilitate the revision of existing leaflets or guidelines, or to issue new leaflets or guidelines; and
4. provide background information for the formulation of various educational and promotional strategies and plans.

III. METHODOLOGY

3.1 Qualitative Study

A focus group was conducted on 21 June 2012 in CASR with smartphone users invited from the general public aged 18 or above in order to find out their experience in using smartphones and their awareness on the risk and security on using them. The results were used to assist the development of the questionnaire in the quantitative study. The summary of focus group discussions is attached in Appendix I.

3.2 Quantitative Study

The target respondents of the survey were smartphone users (Android and iPhone users) from the general public aged between 15 and 70. Telephone interviews were conducted between 19 July and 28 July 2012. The translated English version of the questionnaire (the interview was conducted in Cantonese) is attached in Appendix II. Random sampling was used to select the respondent from each household by using the "Last Birthday" method. Finally, 838 successful interviews were conducted. SPSS was used to perform the data analysis and the detail findings are presented in the following session.

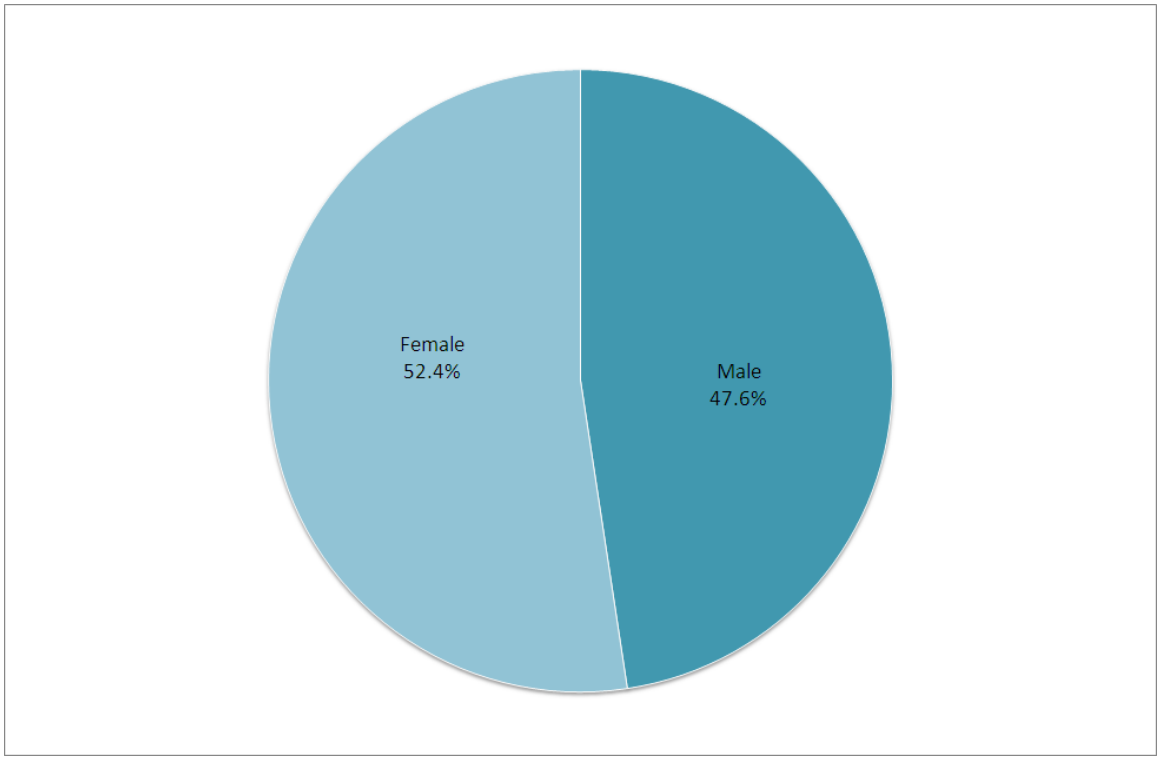
IV. DETAILED FINDINGS OF QUANTITATVIVE STUDY

4.1 Demographic information of respondents who use Android and Smartphone

Gender

52.4% of the respondents are female and 47.6% of the respondents are male.

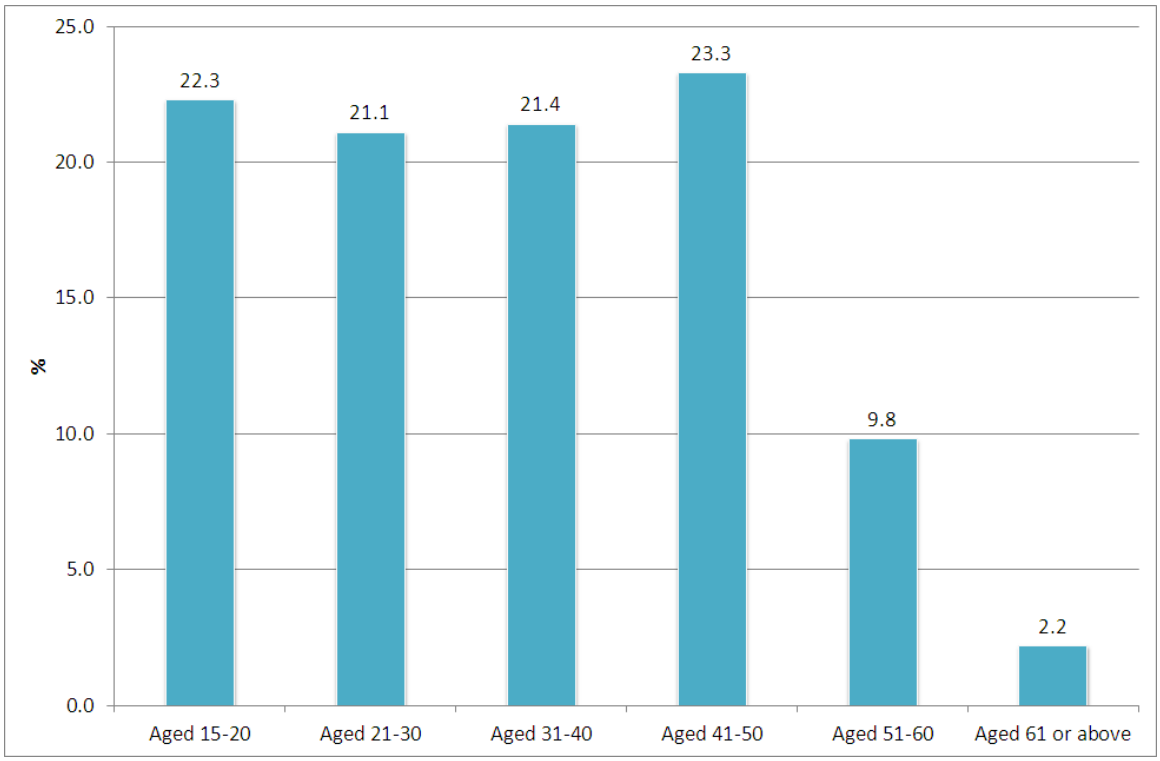
Chart 1: Gender (N=838)



Age

Different age groups were covered in this survey, 23.3% of the respondents were aged between 41 and 50, 22.3% were aged 15-20 and 21.4% were aged 31-40.

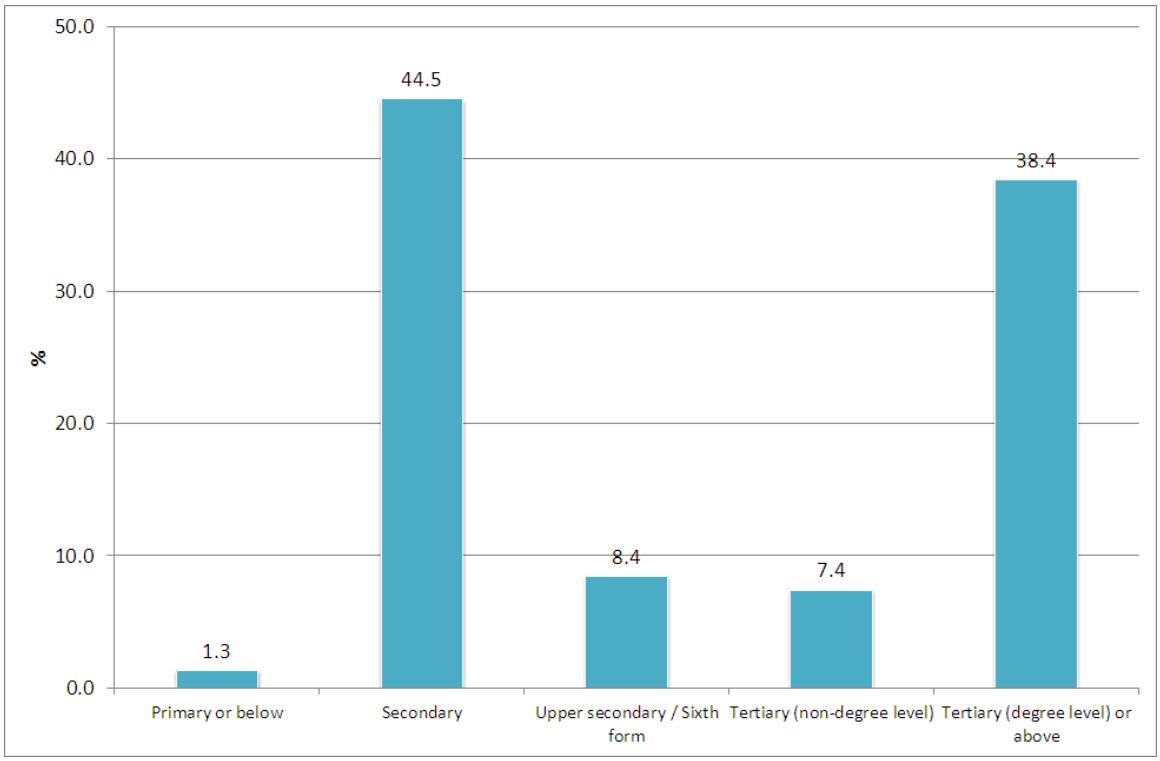
Chart 2: Age (N=838 excluding refusal)



Education

Nearly half (44.5%) of the respondents had secondary education level and 38.4% of respondents had university education level.

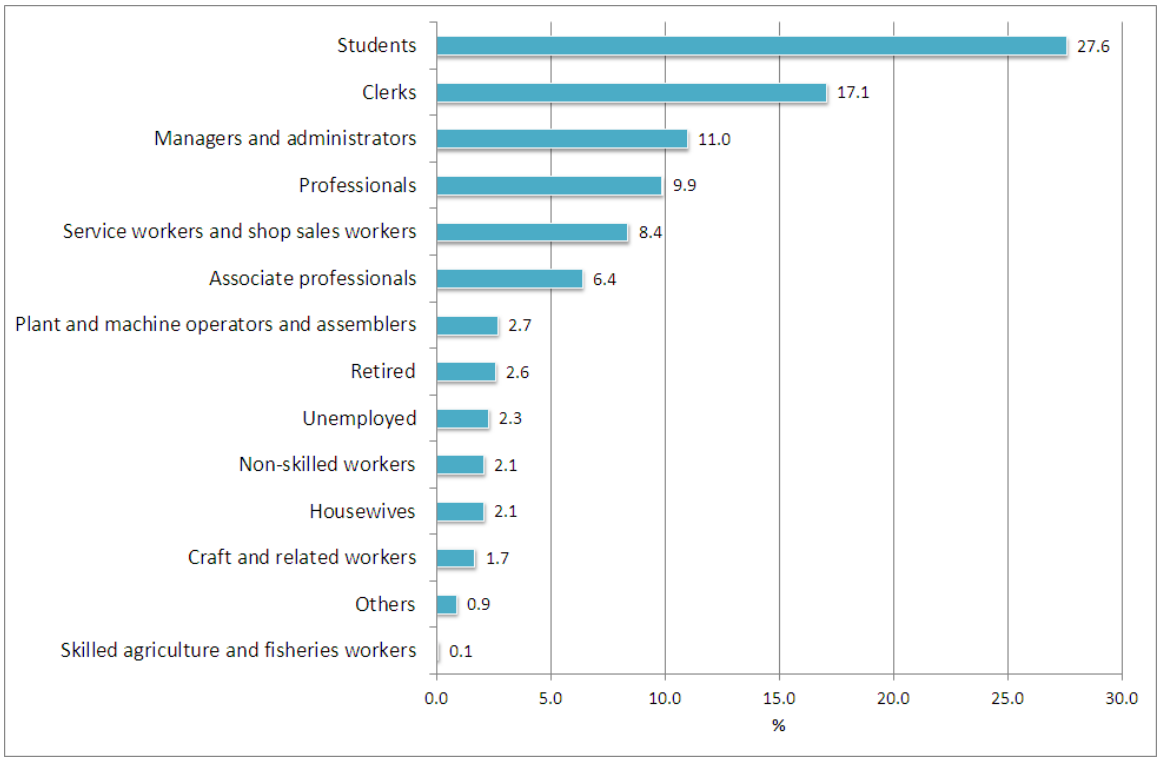
Chart 3: Education (N=838 excluding refusal)



Occupation

More than half (60.3%) of the respondents were working population and the rest were students, housewives, unemployed and retired.

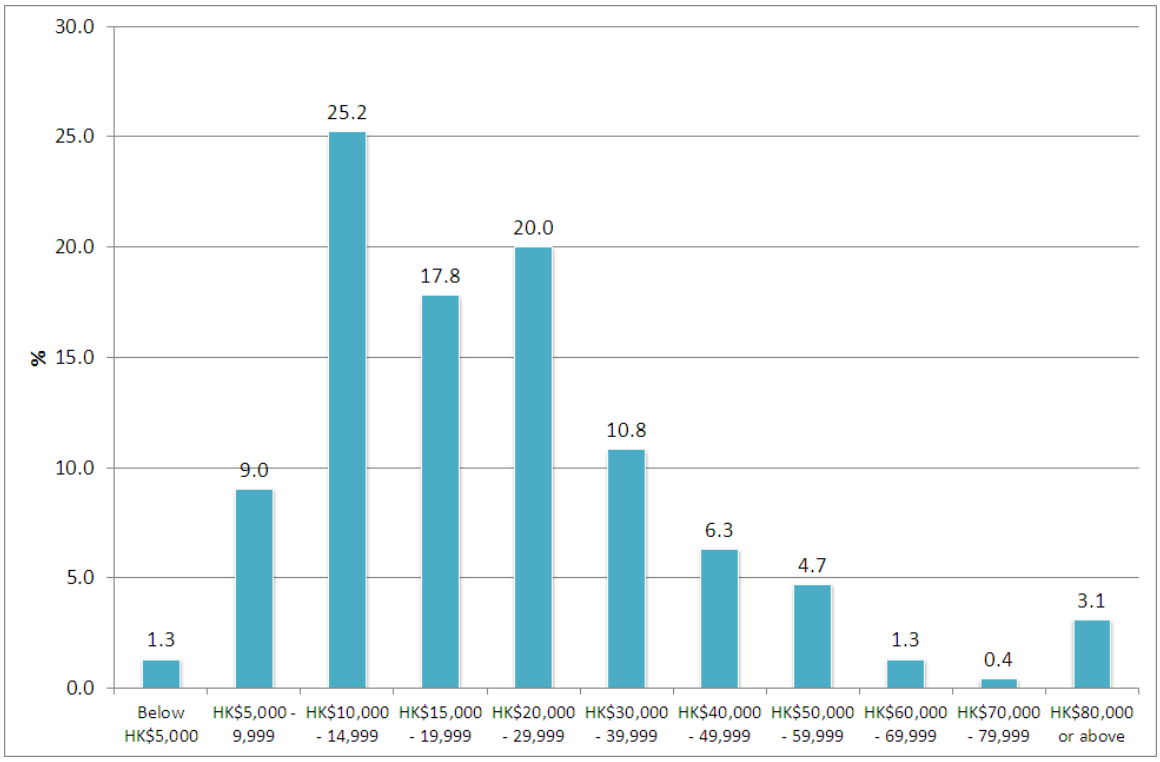
Chart 4: Occupation (N=838 excluding refusal)



Personal monthly income

25.2% of the respondents who were working had income between HK$10,000 and HK$14,999 and 20% of them had income between HK$20,000 and HK$29,999.

Chart 5: Personal monthly income (N=838 excluding refusal)



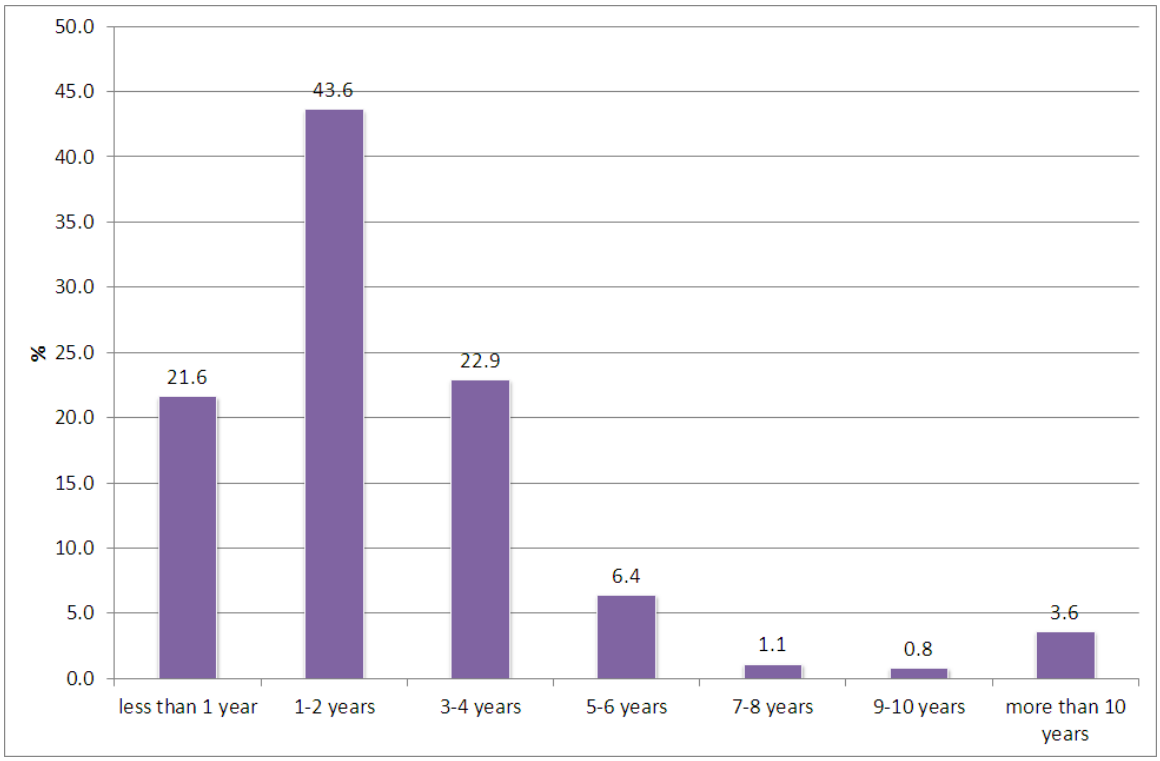
4.2 Analysis of major findings to each question

This section summarises the findings for each question in the questionnaire and the note-worthy relationships between the questions and demographic information. This section is divided into four parts. The first part concerns the general smartphone usage, the second part relates to the use of mobile apps, the third part is about personal data privacy protection when using smartphones in general, the fourth part identifies special characteristics among teenager users and between the two smartphone operating systems of Android and iOS.

4.2.1 General smartphone usage

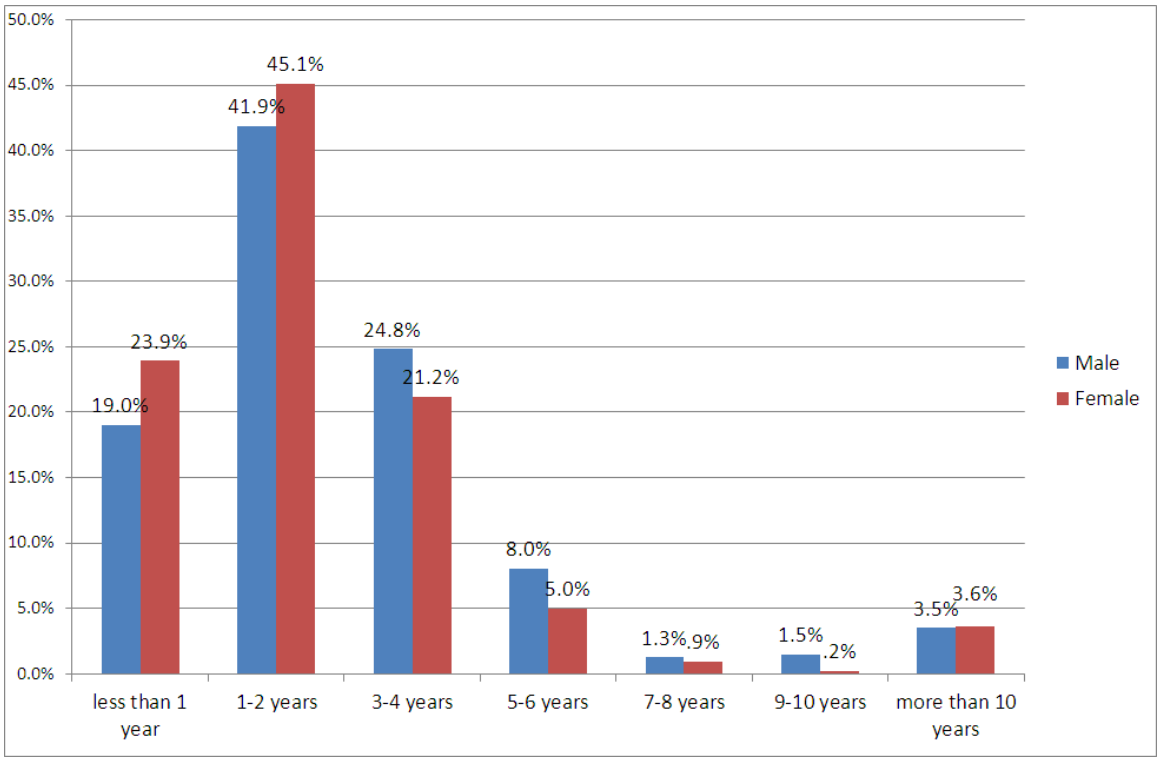
More than half of the respondents (65.2%) have been using smartphone for less than 2 years.

Chart 6: Number of years using smartphone (N=838) – Q1



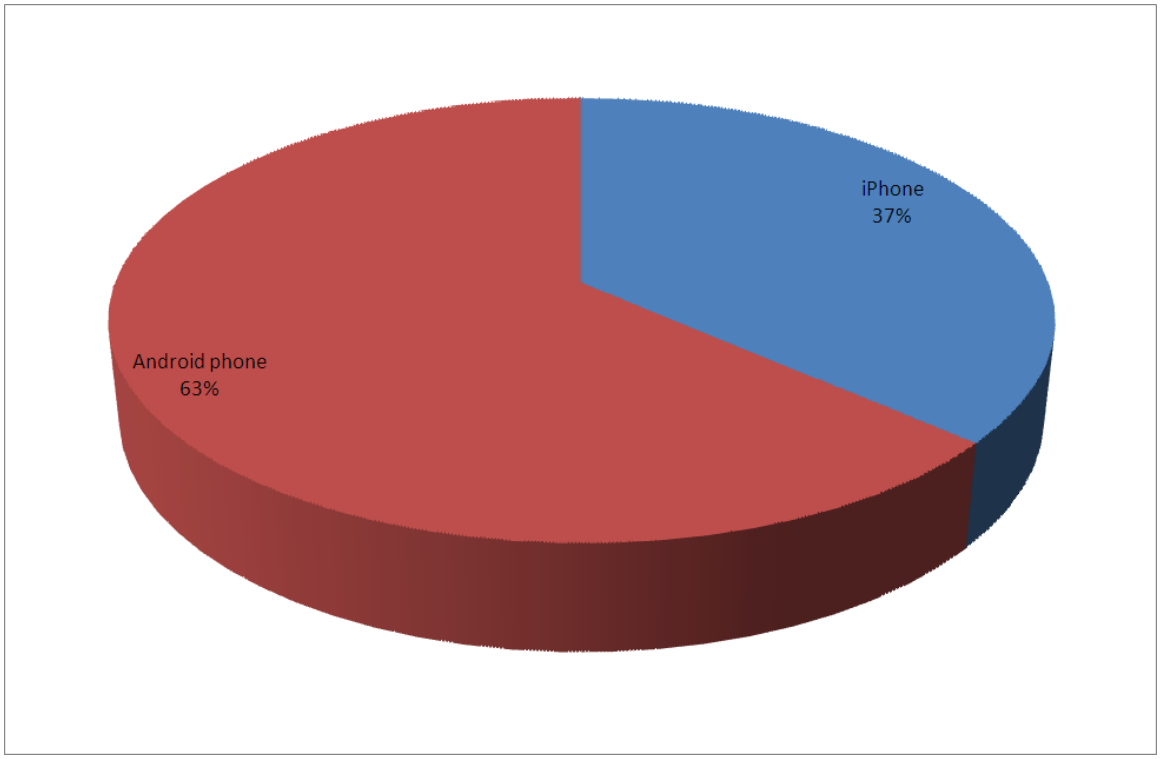
More female (23.9%) than male (19%) respondents used smartphones for less than one year.

Chart 7: Number of years using smartphone vs Gender



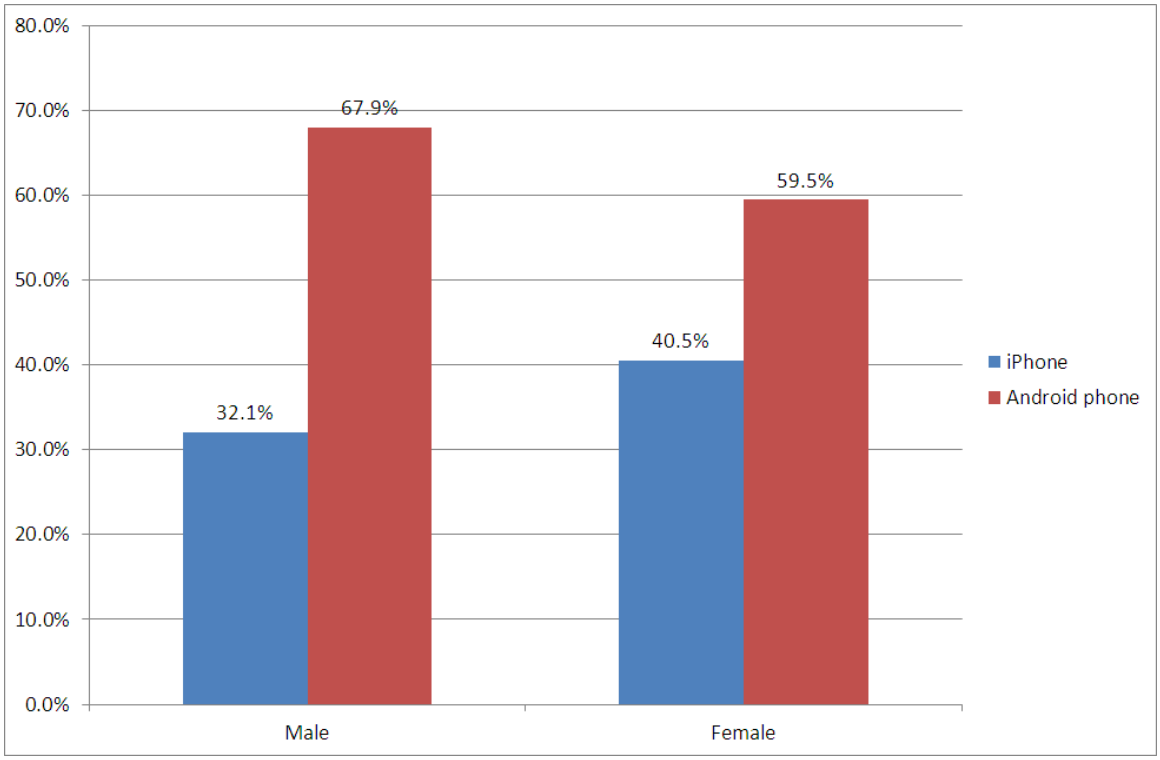
More respondents were using Android (63.5%) than iPhone (36.5%).

Chart 8: Distribution for Android and iPhone users (N=838)



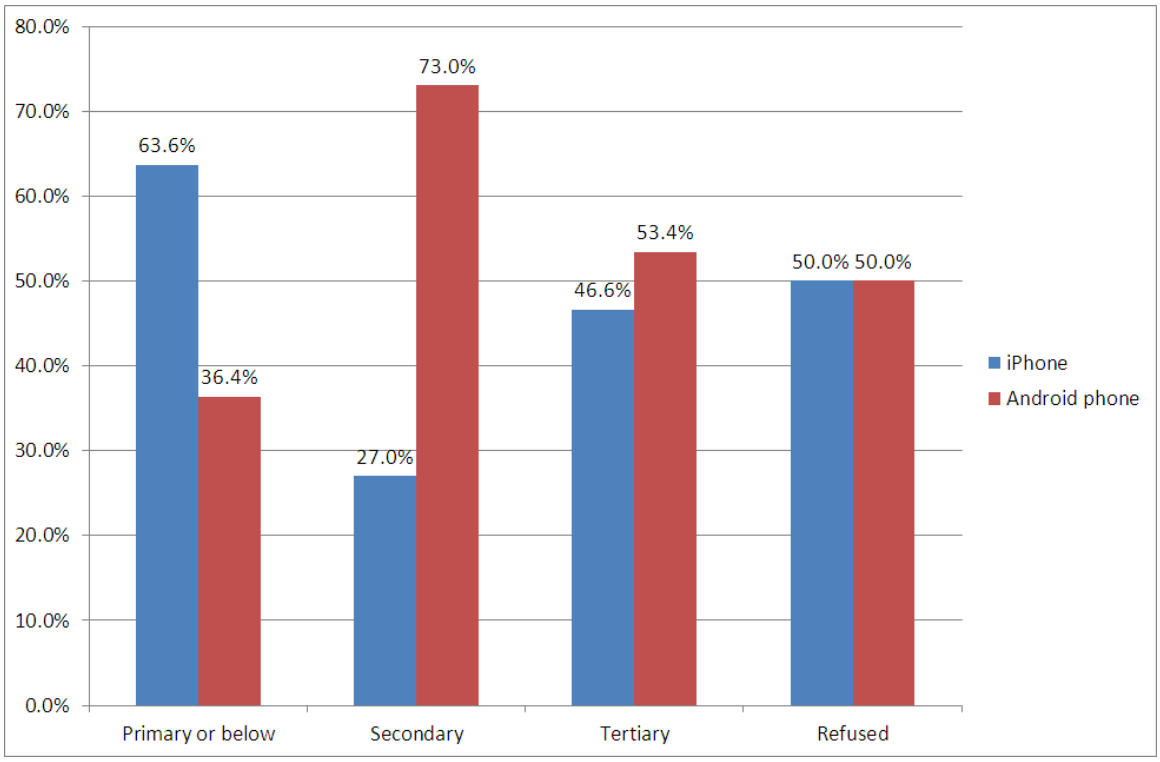
More male (67.9% as compared to the overall 63.5%) than female (59.5% as compared to the overall 63.5%) respondents used Android.

Chart 9: Use of Android and iPhone vs Gender



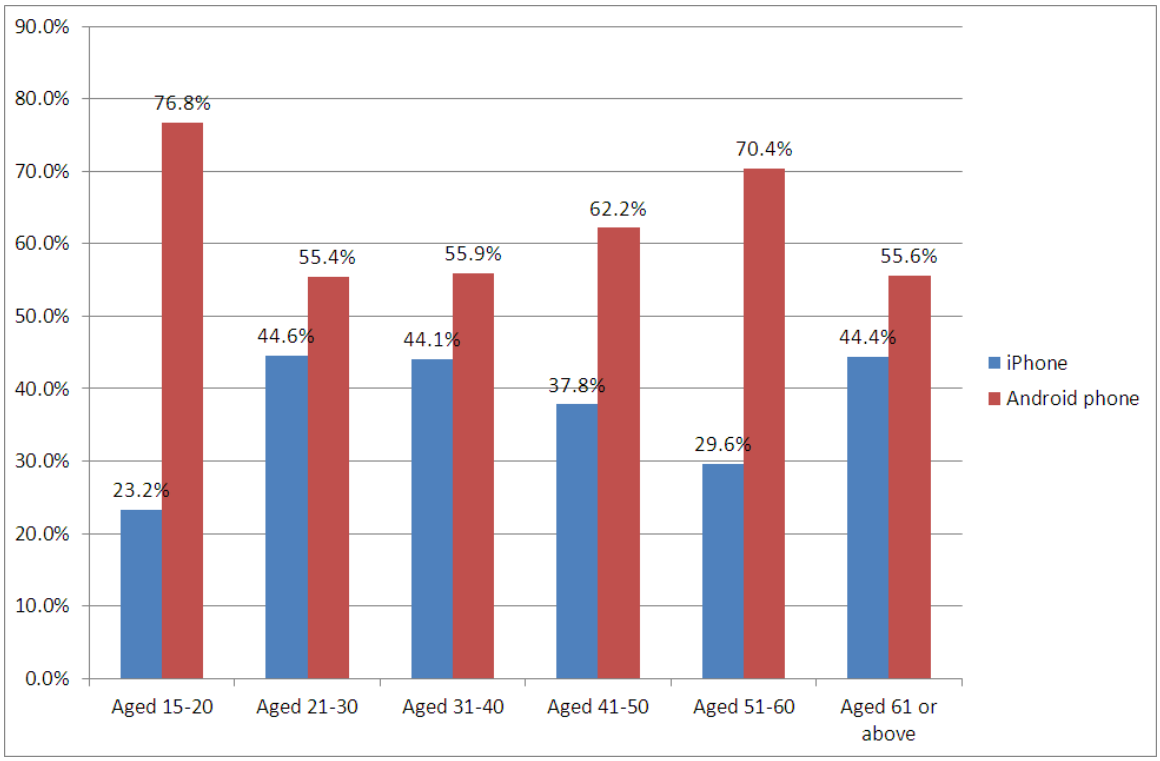
Among respondents with secondary education background, more users chose to use Android (73% as compared to the overall 63.5%) than iPhone (27% as compared to the overall 36.5%)

Chart 10: Use of Android and iPhone vs Education



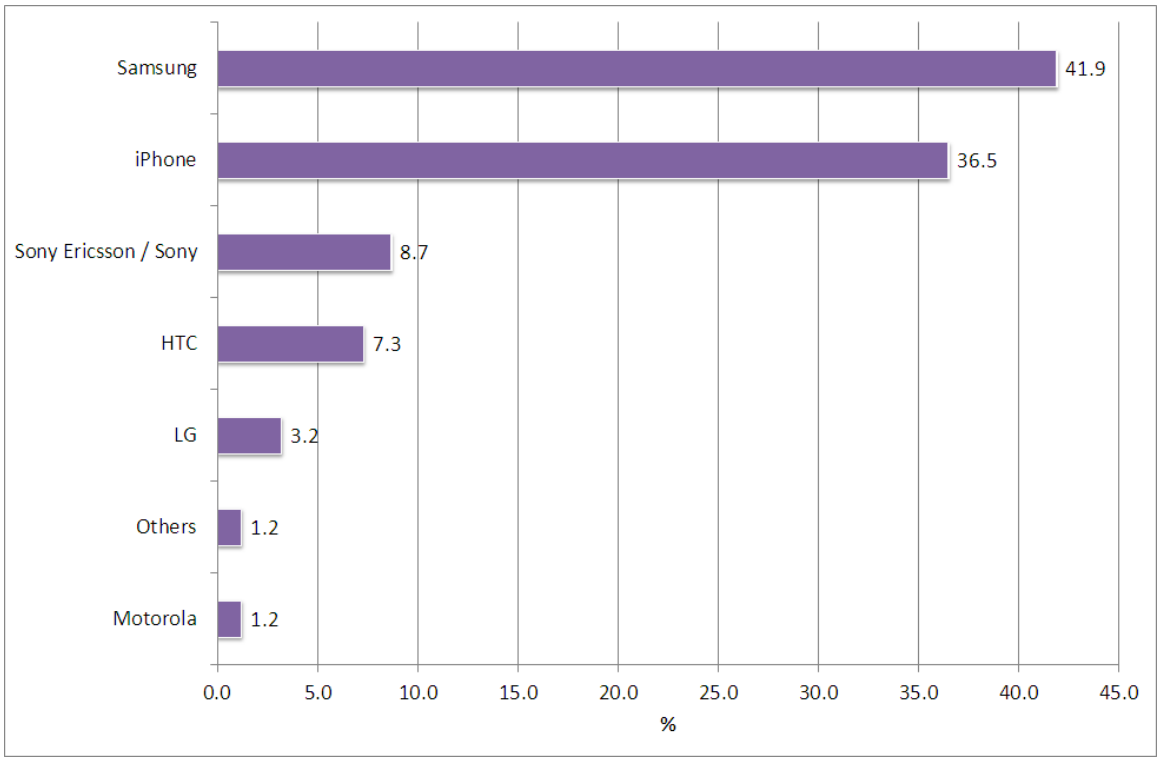
Among respondents in the 15- 20 age group, more users chose to use Android (76.8% as compared to the overall 63.3%) than iPhone (23.2% as compared to the overall 36.7%). However, among respondents in the 21-40 age group, fewer users chose to use Android (55.7% as compared to the overall 63.3%) than iPhone (44.3% as compared to the overall 36.7%).

Chart 11: Use of Android and iPhone vs Age



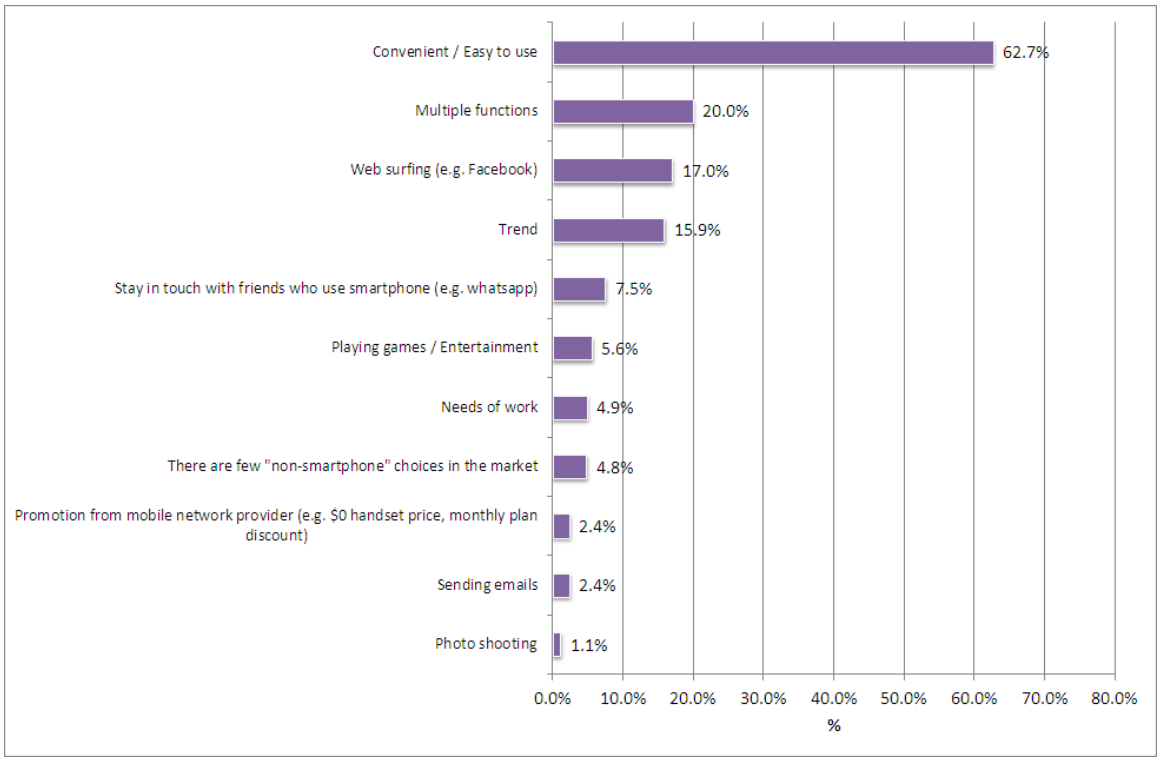
41.9% of the respondents were using Samsung smartphone. 36.5% of them were using iPhone and 8.7% of them were using Sony Ericsson / Sony smartphone.

Chart 12: Brand of smartphone respondents using (N=838) – Q2



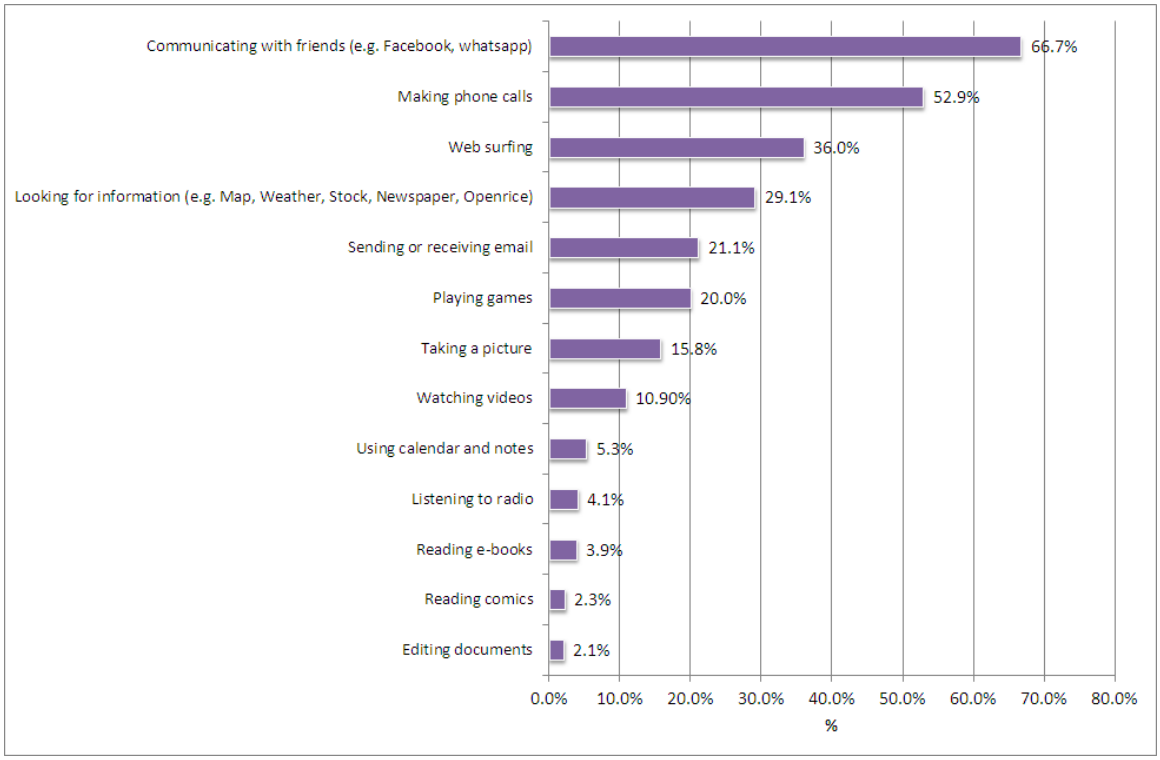
Most respondents chose to use smartphone because it was considered convenient (62.7%) and it had multiple functions (20%).

Chart 13: Reasons for using Smartphone (N=838) – Q4



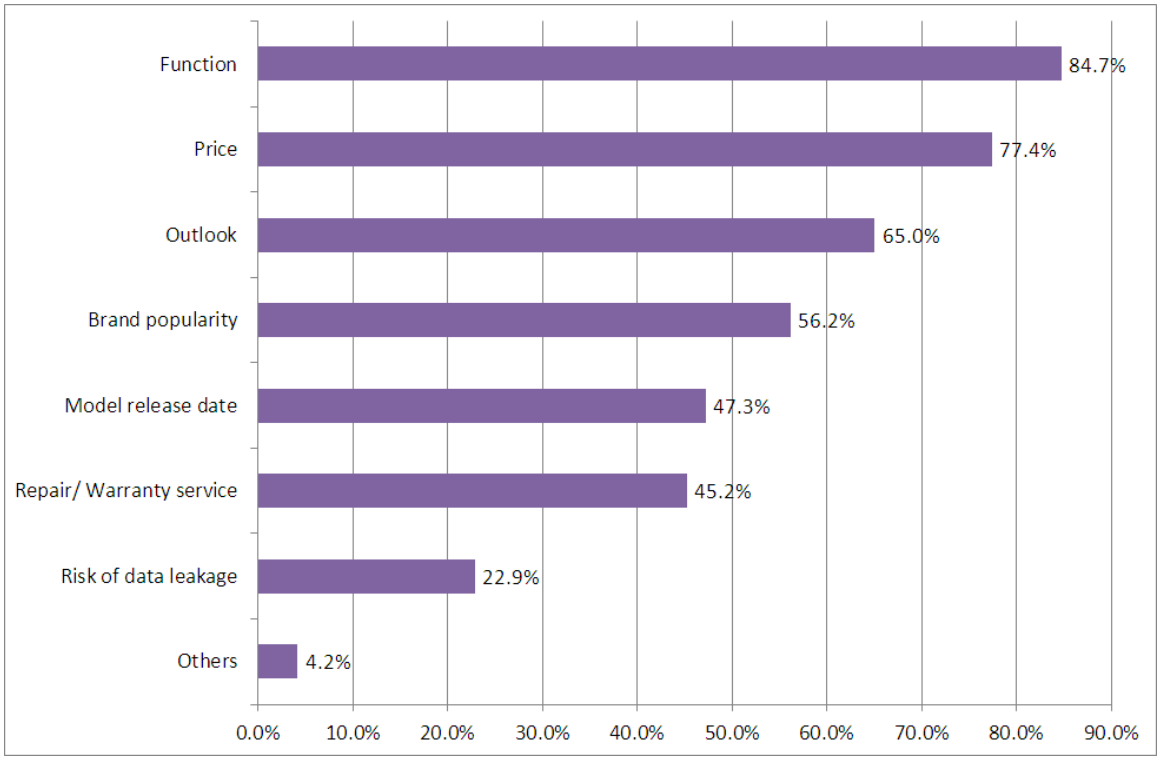
More than half of respondents used smartphone for text communications (66.7% communicated with friends using Whatsapp and Facebook, etc.). It was shown that more people were using smartphone for text communications than making phone calls (52.9%).

Chart 14: Common uses of Smartphone (N=838) – Q5



84.7% of respondents considered functionality as a primary factor for choosing smartphones. Only 22.9% of respondents considered "risk of data leakage" when purchasing smartphones.

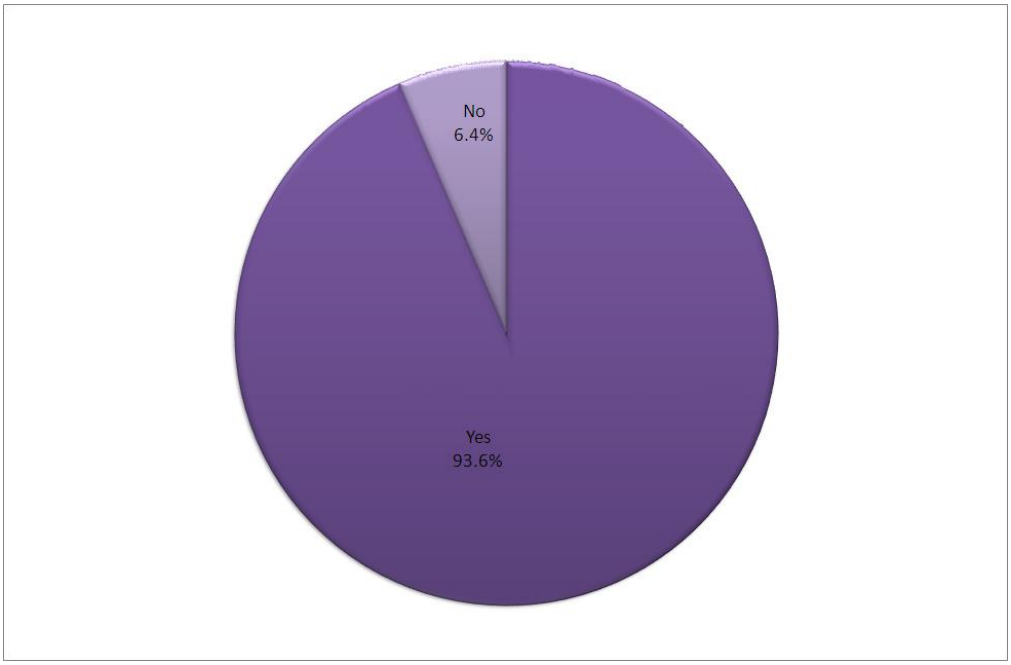
Chart 15: Consideration when purchasing a Smartphone (N=838) – Q21



4.2.2 Use of Mobile apps

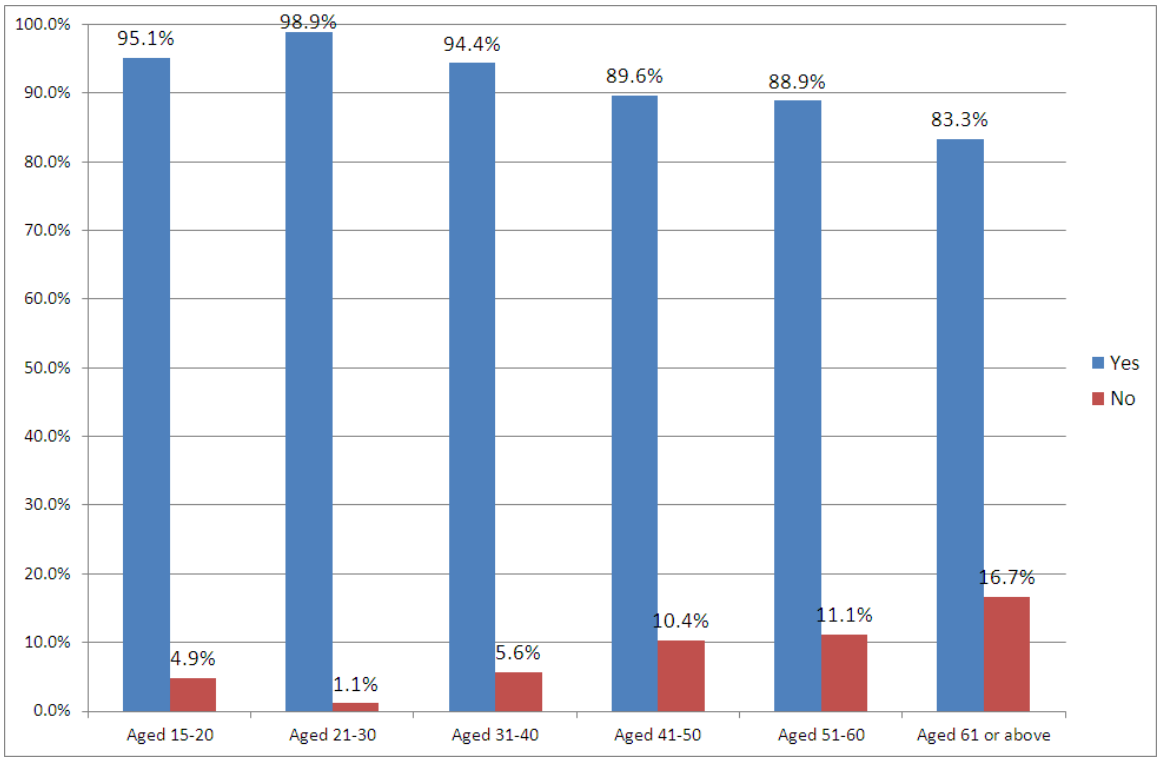
It was found that 93.6% of respondents installed apps to their smartphones.

Chart 16: Incidence in installing mobile apps (N=838) – Q6



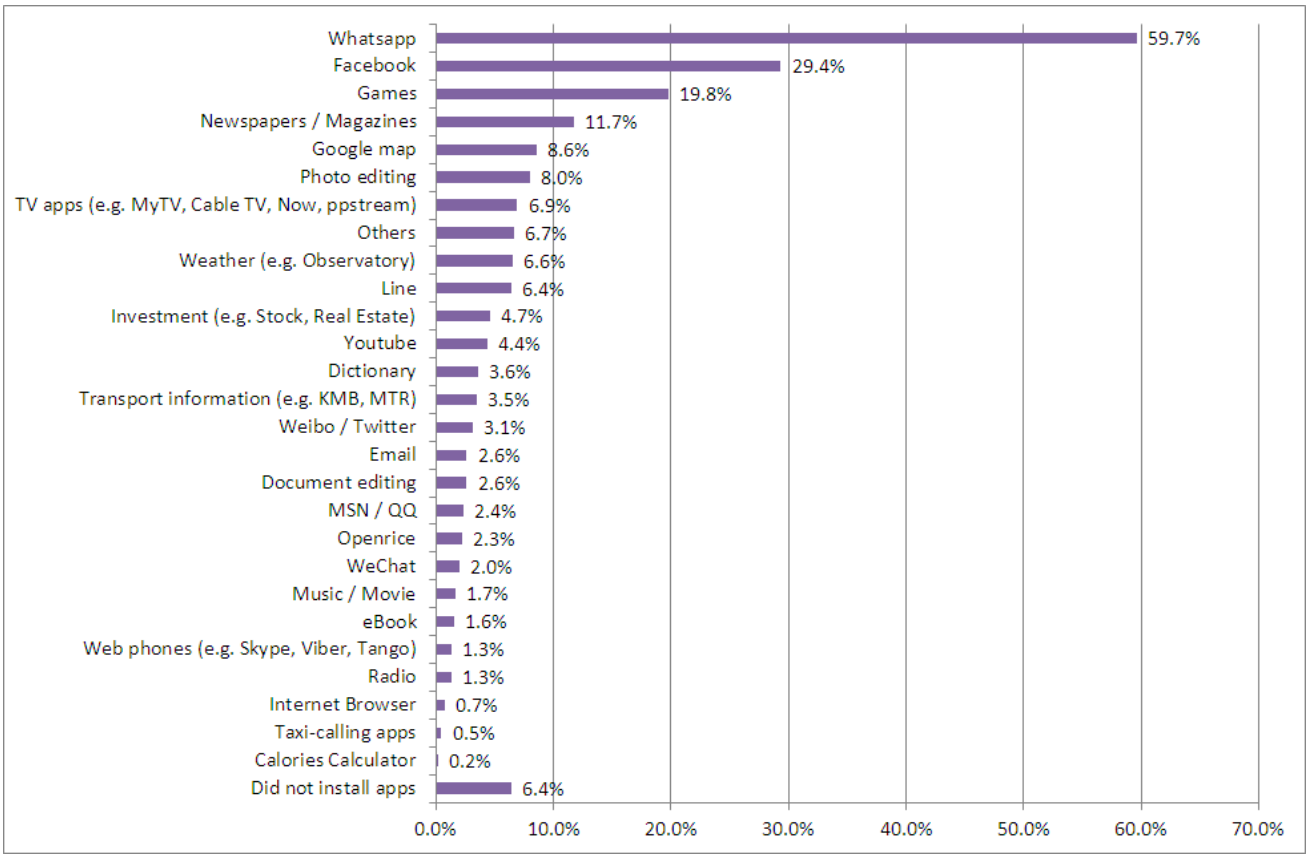
More respondents aged 15-40 or below (94.4% – 98.9%) installed apps than other age groups (83.3% – 89.6%).

Chart 17: Incidence in installing mobile apps vs Age



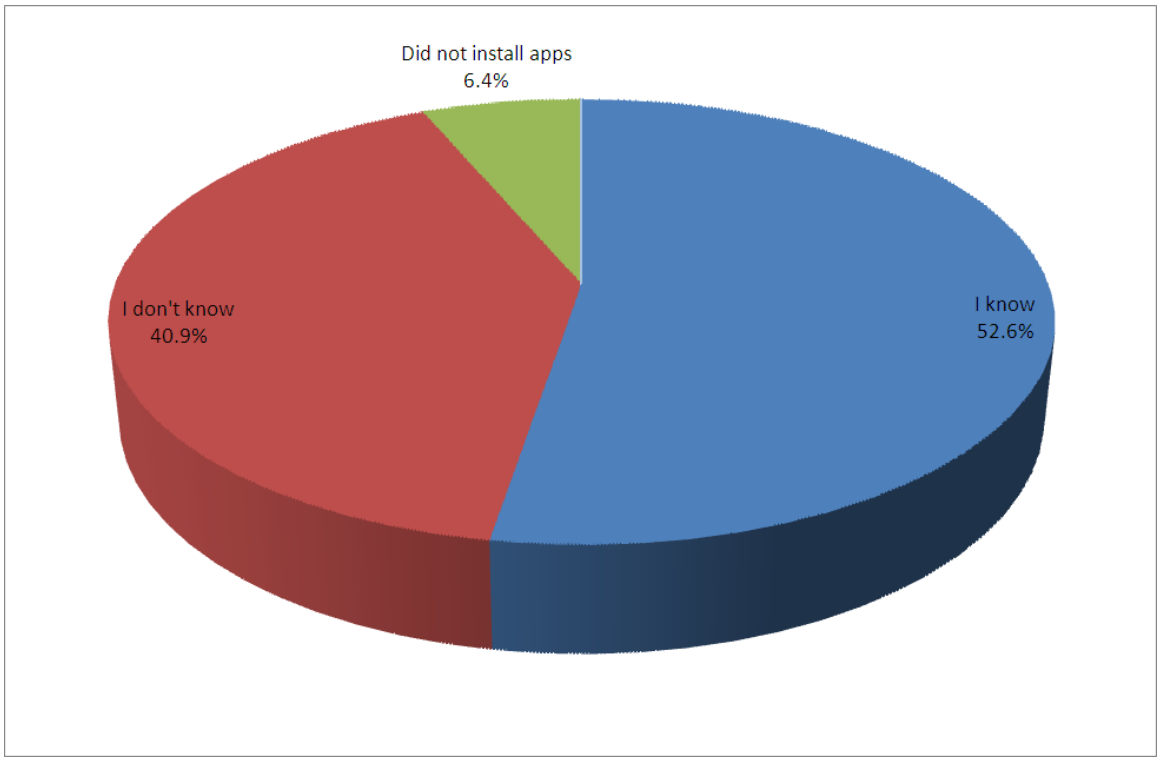
For those respondents who installed apps, Whatsapp (59.7%) and Facebook (29.4%) were the most popular app.

Chart 18: Most-commonly-used apps (N=838) – Q7



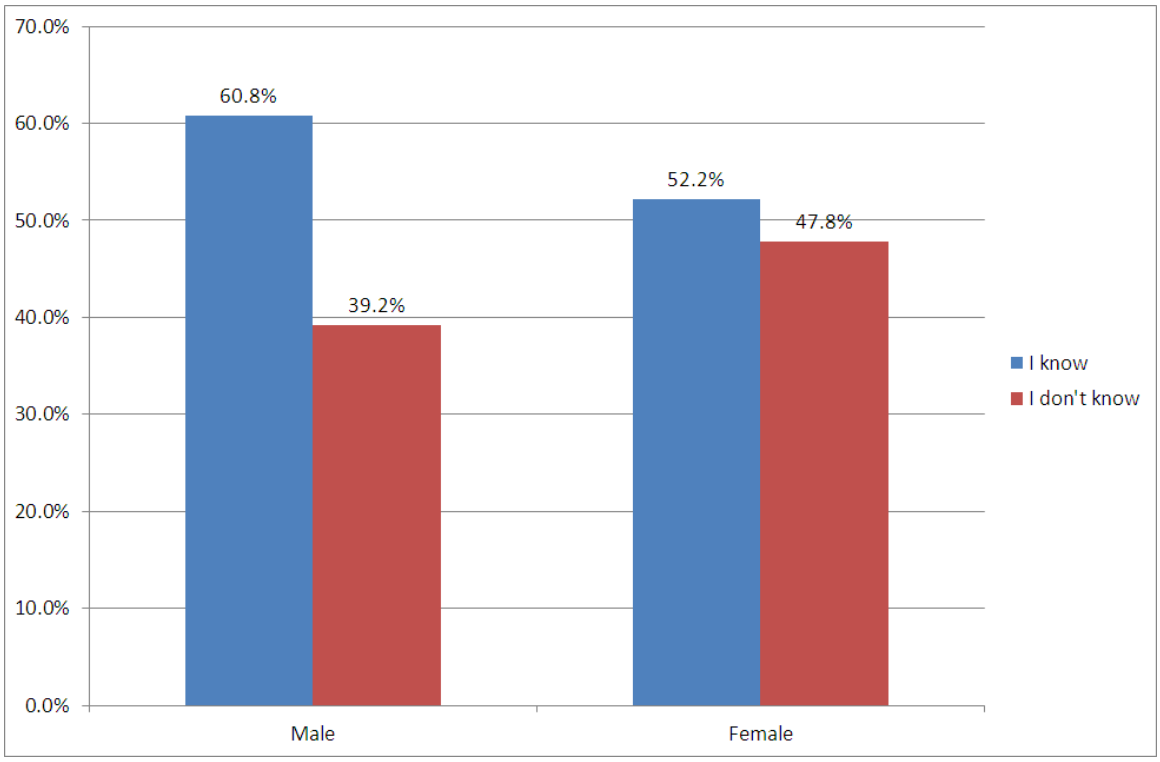
Only 52.6% of smartphone users kept count of the apps they installed.

Chart 19: Incidence in knowing the number of apps they have downloaded (N=838) – Q8



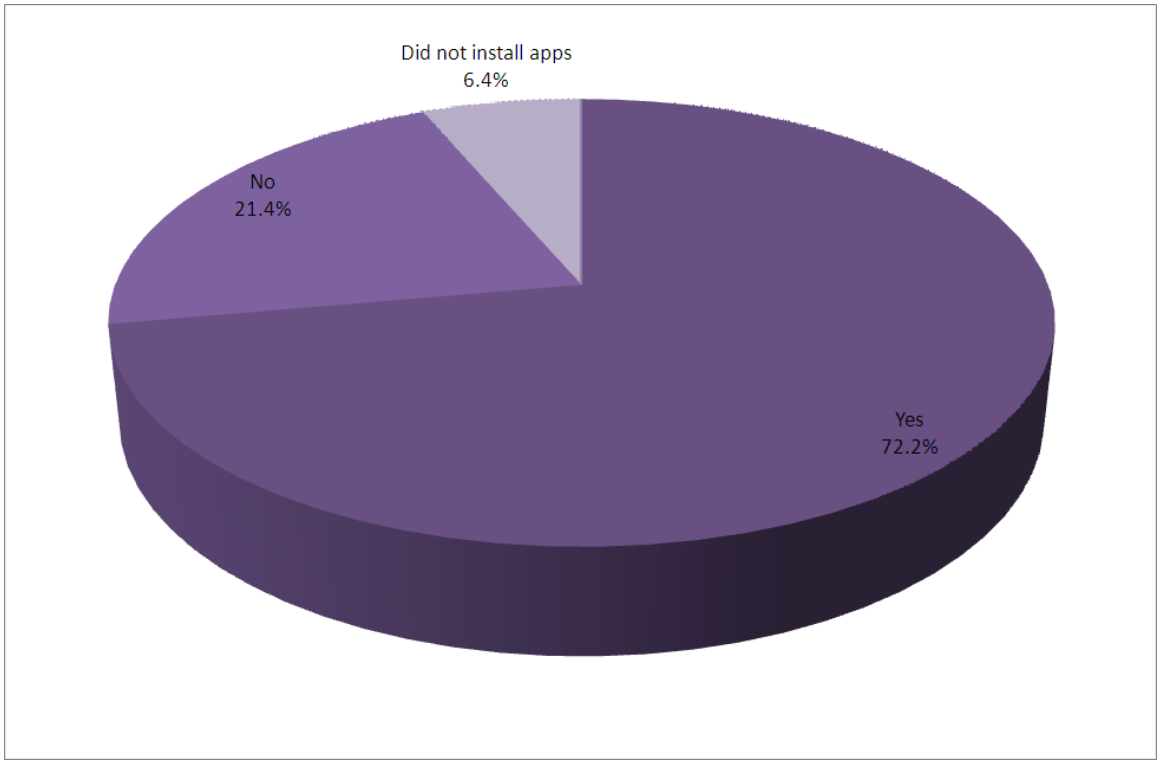
More male respondents (60.8%) were aware of the number of apps they installed than female respondents (52.2%).

Chart 20: Incidence in knowing the number of apps they have downloaded vs Gender



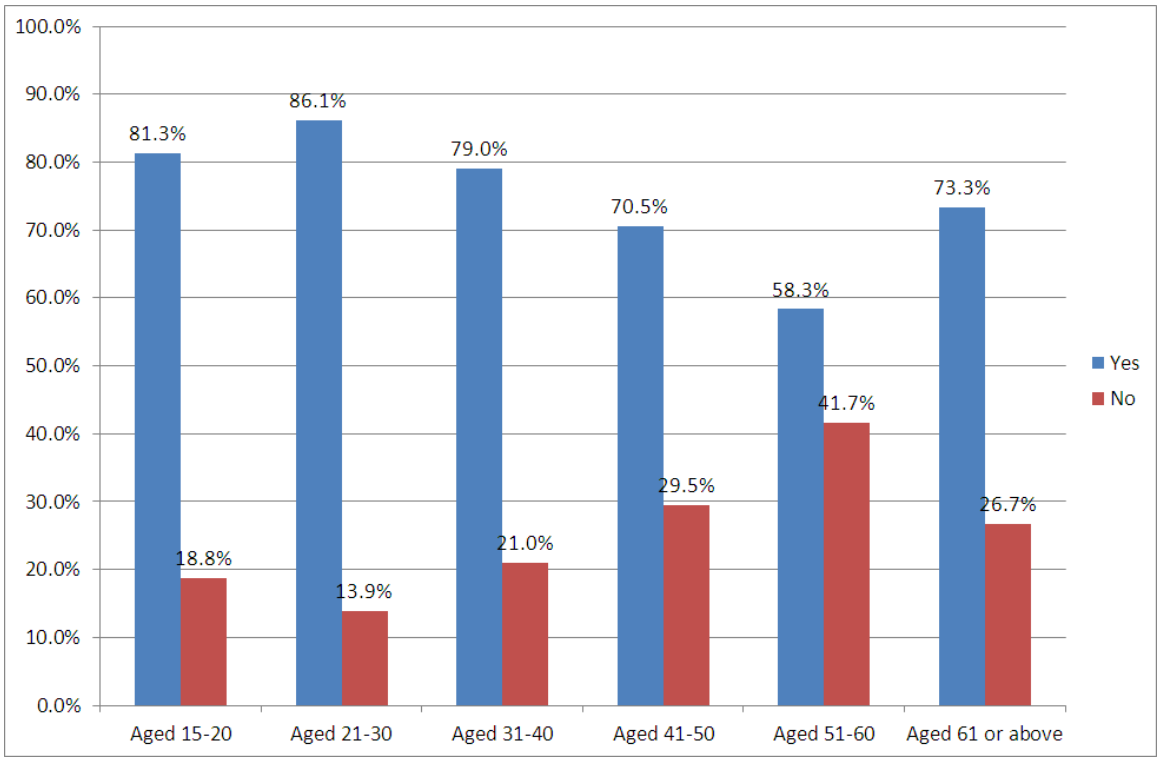
72.2% of respondents who installed apps periodically checked their installed apps and deleted unused ones.

Chart 21: Incidence in checking the installed apps (N=838) – Q9



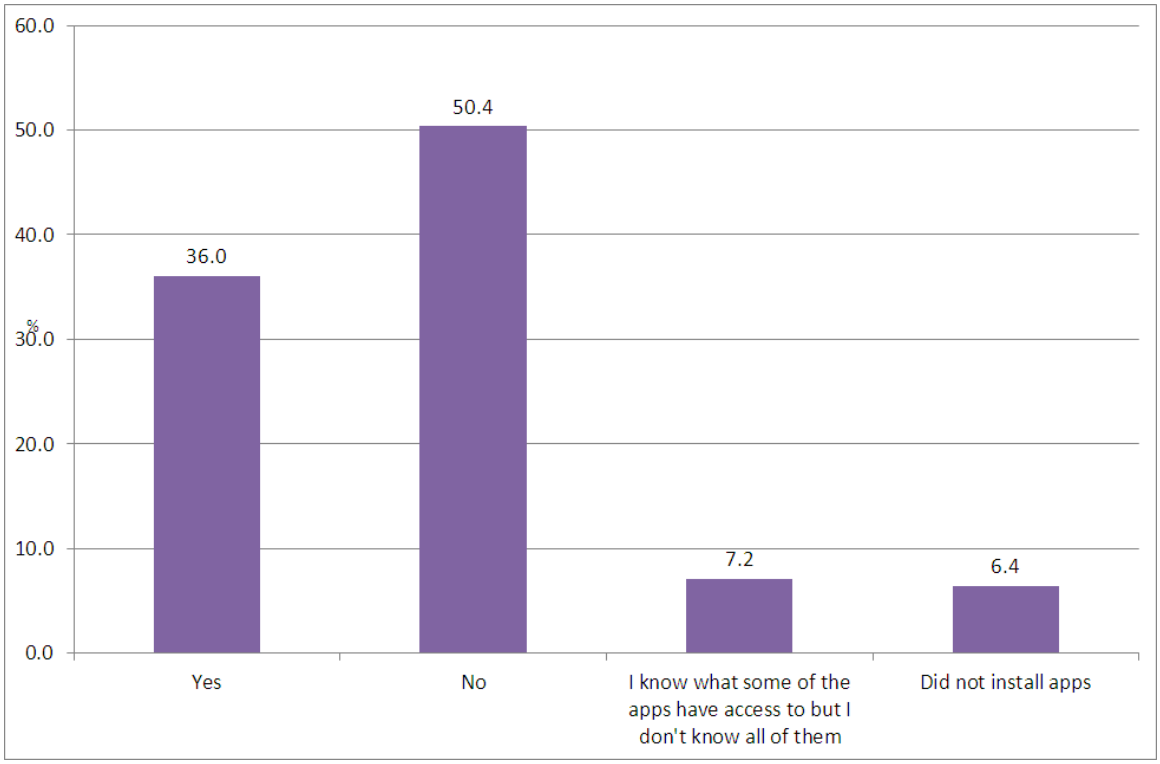
It was discovered that those aged 51-60 performed fewer checking and deletion (58.3% as compared to the overall 77.2%) than other age groups.

Chart 22: Incidence in checking the installed apps vs Age



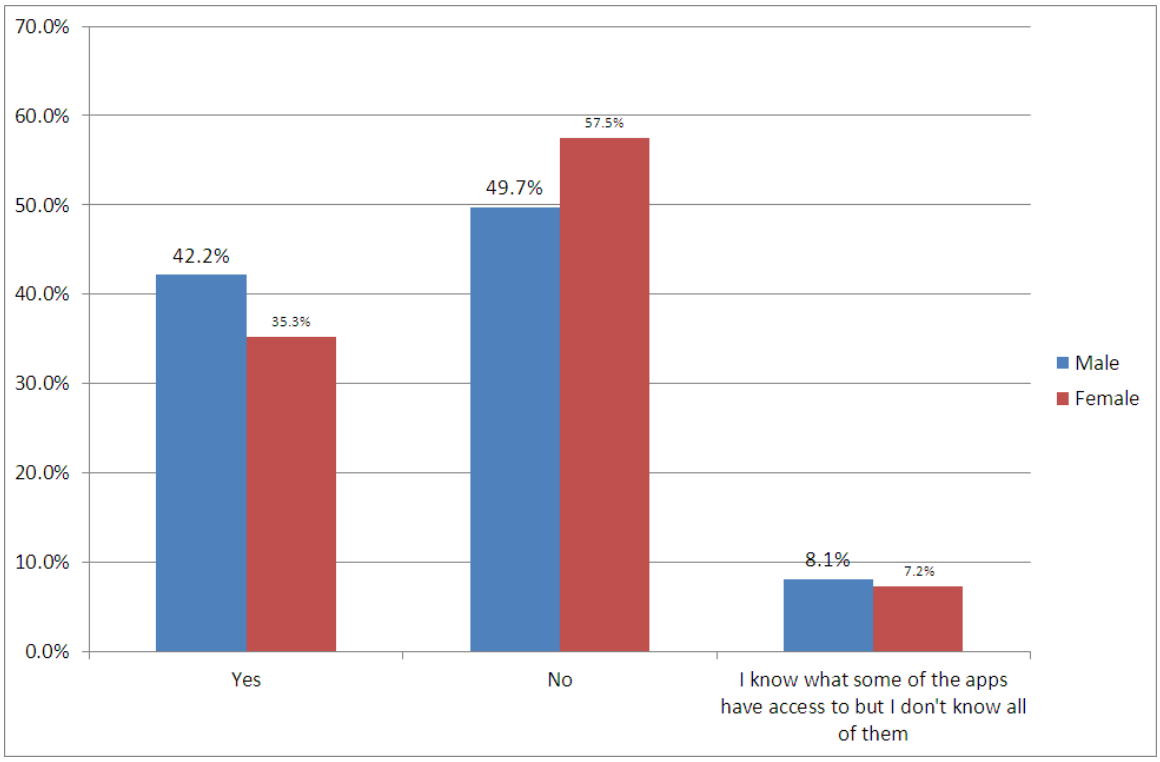
For respondents who installed apps, 38.5% of them knew what information their apps had access to.

Chart 23: Incidence in knowing the apps have access right to the information on the Smartphone (N=838) – Q10



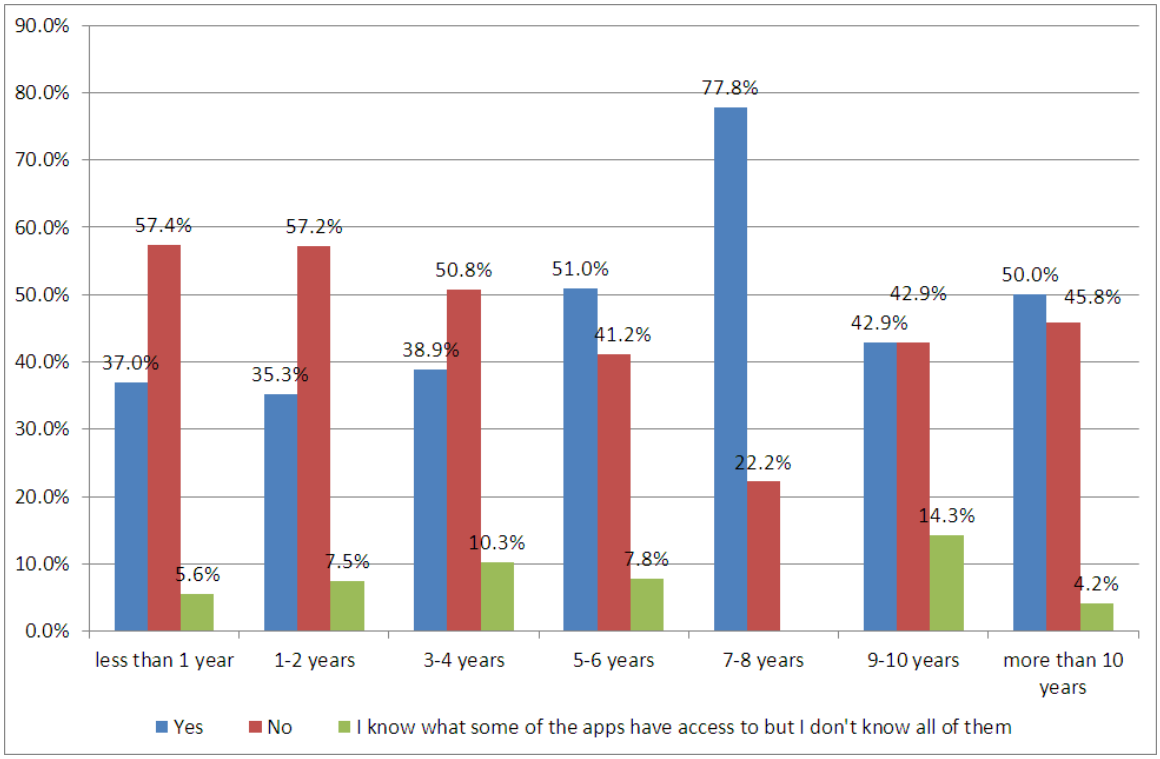
More male respondents (42.2%) were aware of this than female respondents (35.3%).

Chart 24: Incidence in knowing the apps have access right to the information on the Smartphone vs Gender



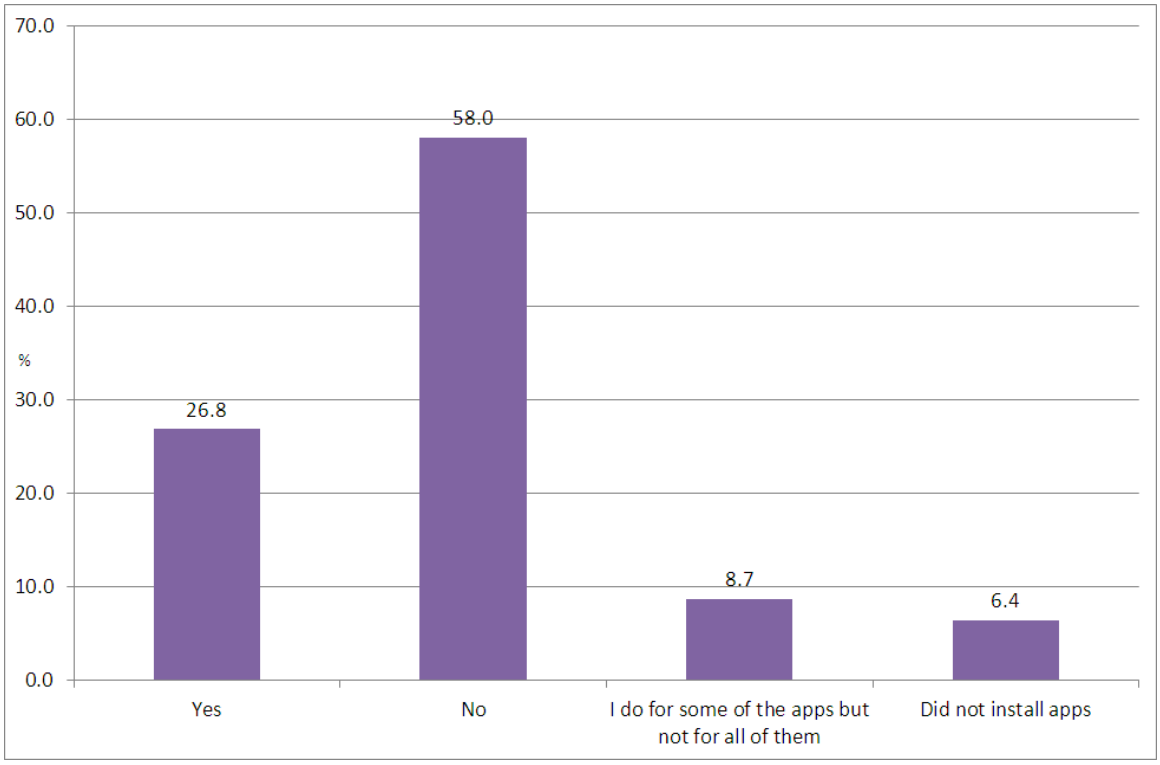
This awareness level was the lowest among respondents who used smartphone for four years or less (37%-38.9% compared to other groups of 42.9% -77.8%).

Chart 25: Incidence in knowing the apps have access right to the information on the Smartphone vs Years of using Smartphone



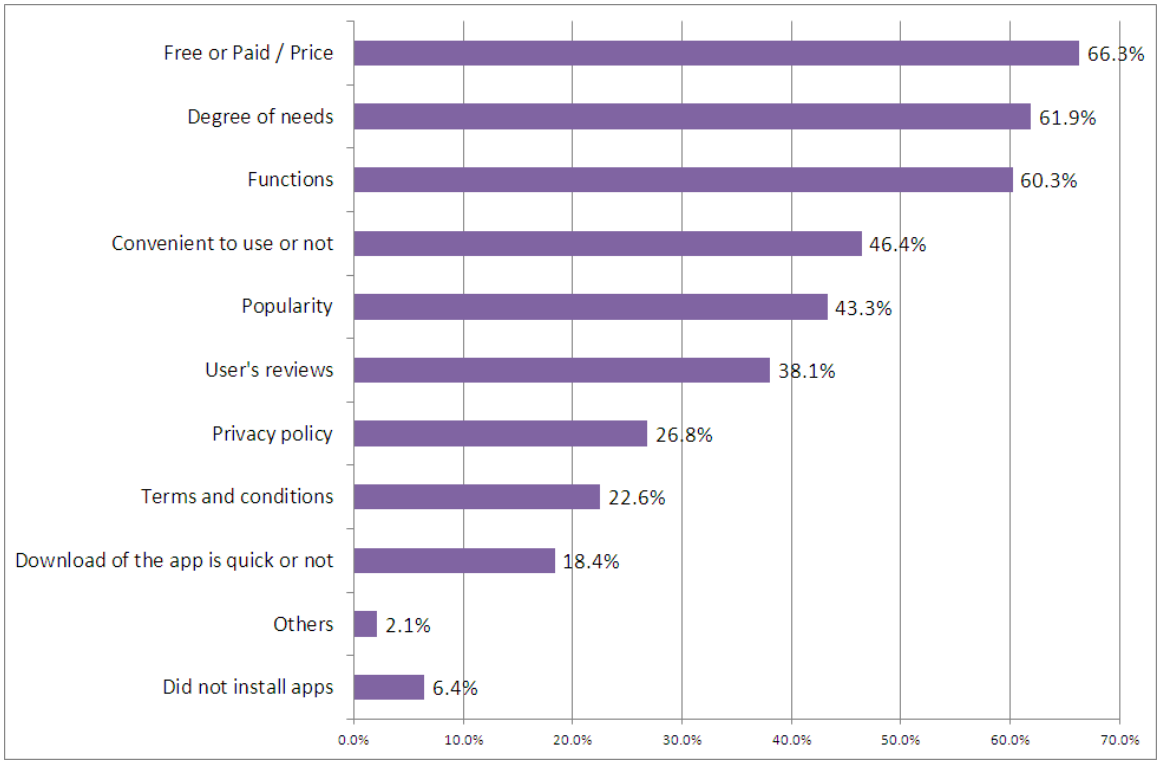
There were 58% of them indicated that they had not read the terms and conditions clearly or ensured that they understood the apps' access rights before installing the apps.

Chart 26: Incidence in reading the terms and conditions (N=838) – Q10a



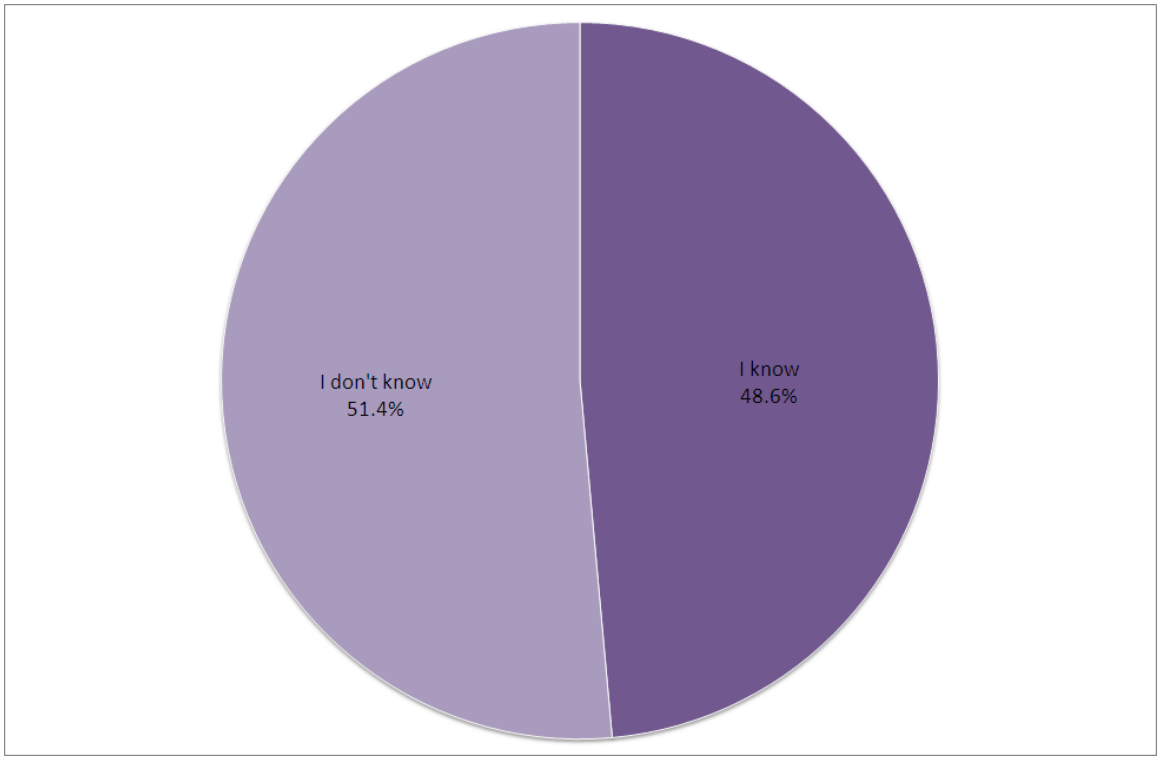
Only 26.8% and 22.6% of them would consider "Privacy Policy" and "Terms and Conditions" as determinants when installing an app.

Chart 27: Consideration when downloading an app (N=838) – Q11



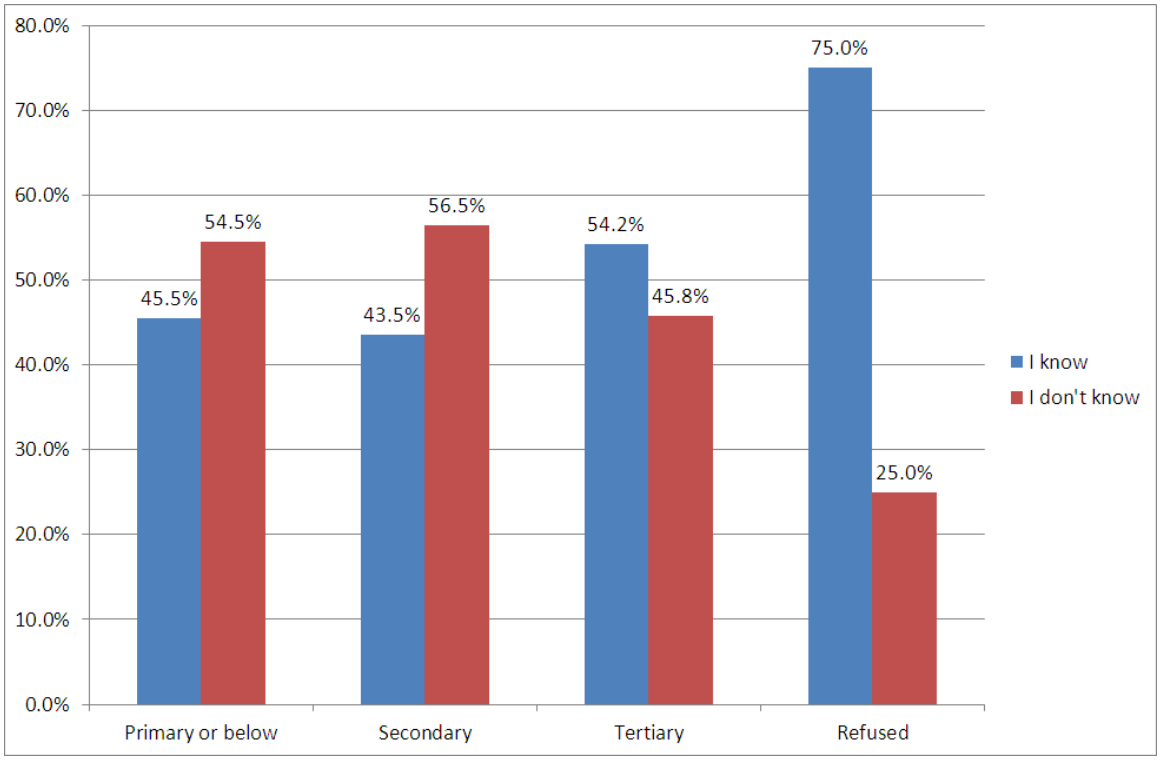
In addition, it should be noted that 51.4% of respondents who installed apps did not know that their contact lists might be uploaded to a central server when using social network apps.

Chart 28: Incidence in knowing the contact lists might be uploaded to a central service when using social network apps (N=838) – Q15



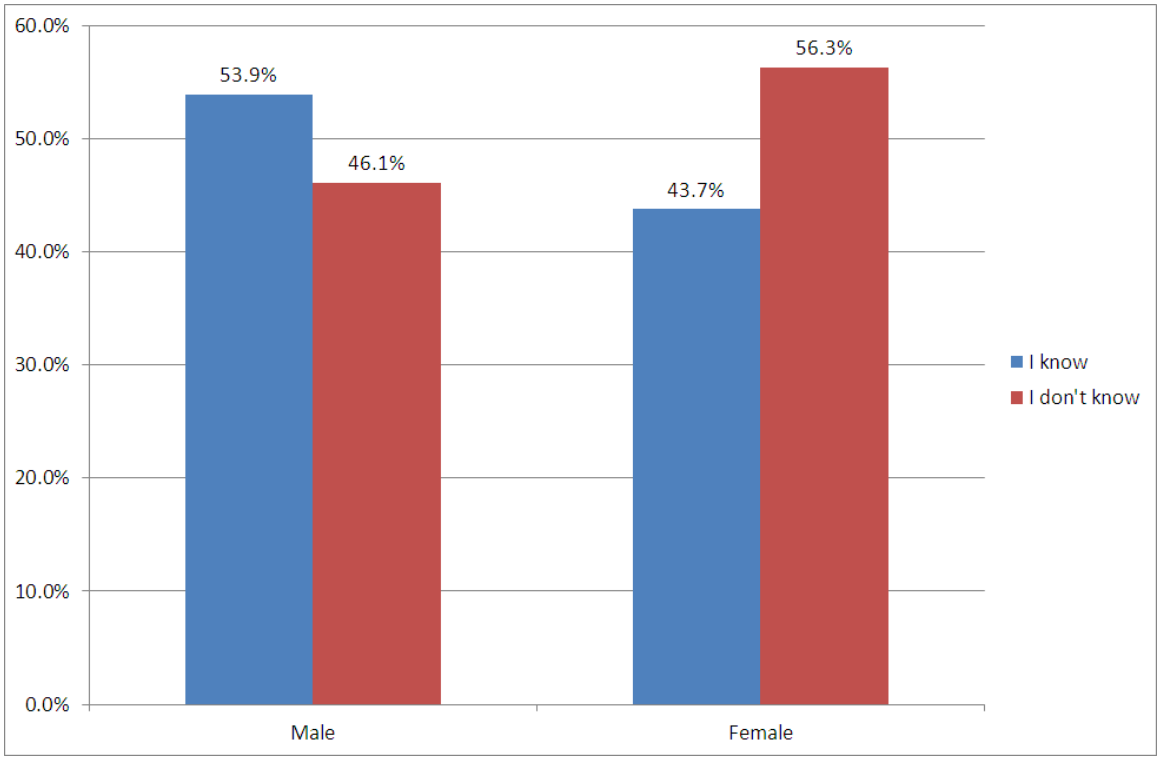
More respondents with primary (54.5% when compared with the overall 51.4%) and secondary education (56.5% when compared with the overall 51.4%) than those with tertiary education (45.8% when compared with the overall 51.4%) did not know that their contact lists might be uploaded to a central server when using social network apps.

Chart 29: Incidence in knowing the contact lists might be uploaded to a central service when using social network apps vs Education



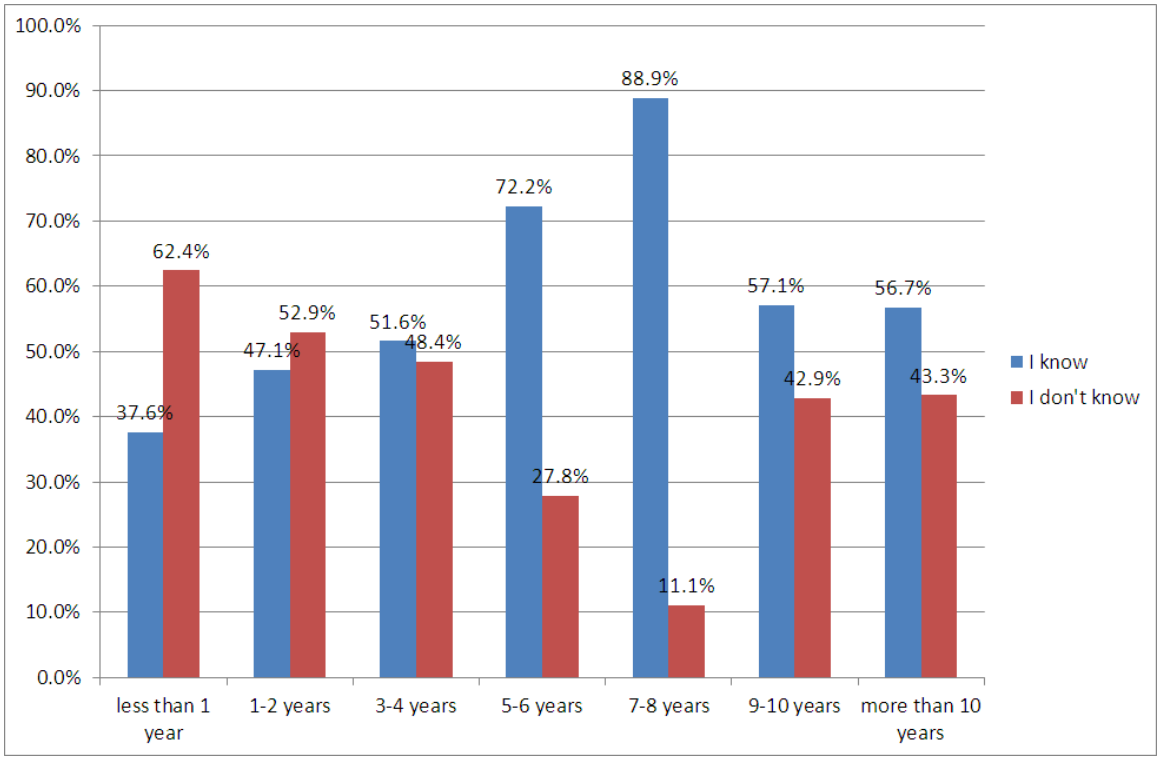
More female (56.3% when compared with the overall 51.4%) than male (46.1% when compared with the overall 51.4%) respondents did not know about this arrangement.

Chart 30: Incidence in knowing the contact lists might be uploaded to a central service when using social network apps vs Gender



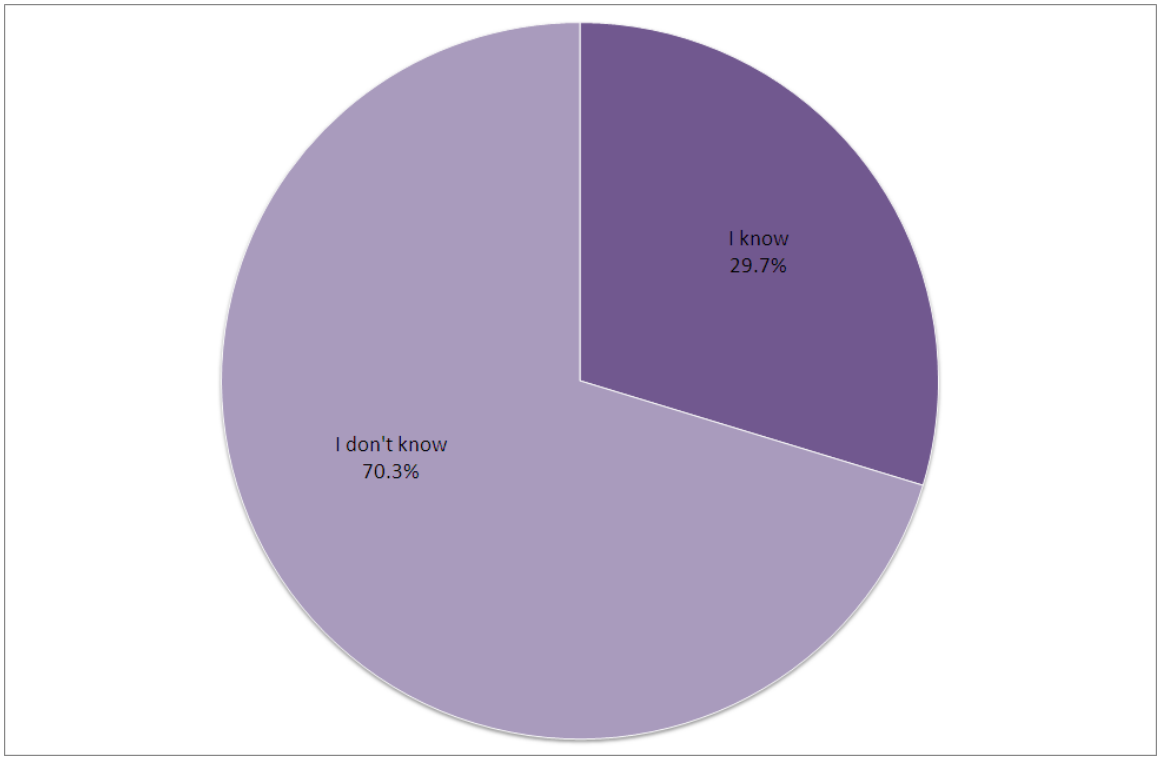
For length of use less than 2 years, the shorter the use the less aware they were of the issue (i.e. 11% difference for those used for less than one year and only 1.5% for those using it for 1 - 2 years). Likewise, the longer the experience, the more awareness there was (ranging from 3% better for 3 - 4 year experience to 23.6% better for 5 - 6 years).

Chart 31: Incidence in knowing the contact lists might be uploaded to a central service when using social apps vs Years of using Smartphone



Analysis also showed that for those respondents who installed apps, 70.3% of them did not know that apps might secretly access information they had not said they would.

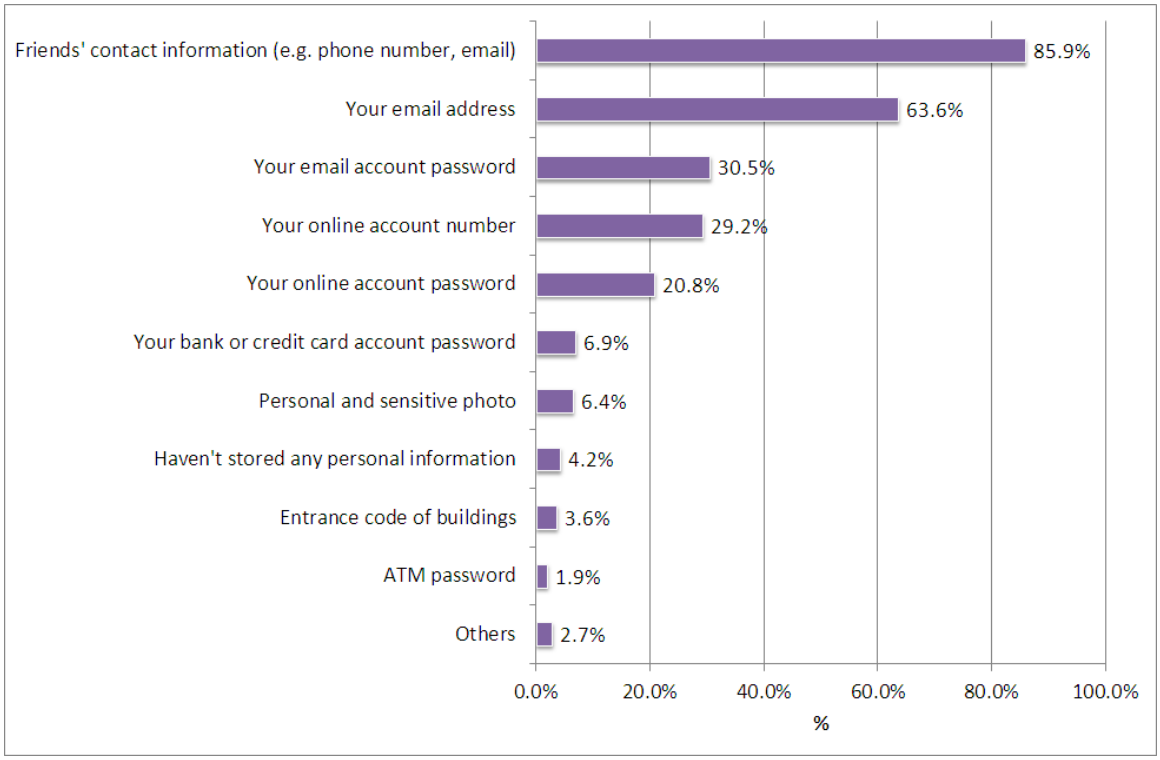
Chart 32: Incidence in knowing the apps might secretly access information they had not said they would (N=838) – Q16



4.2.3 Privacy protection

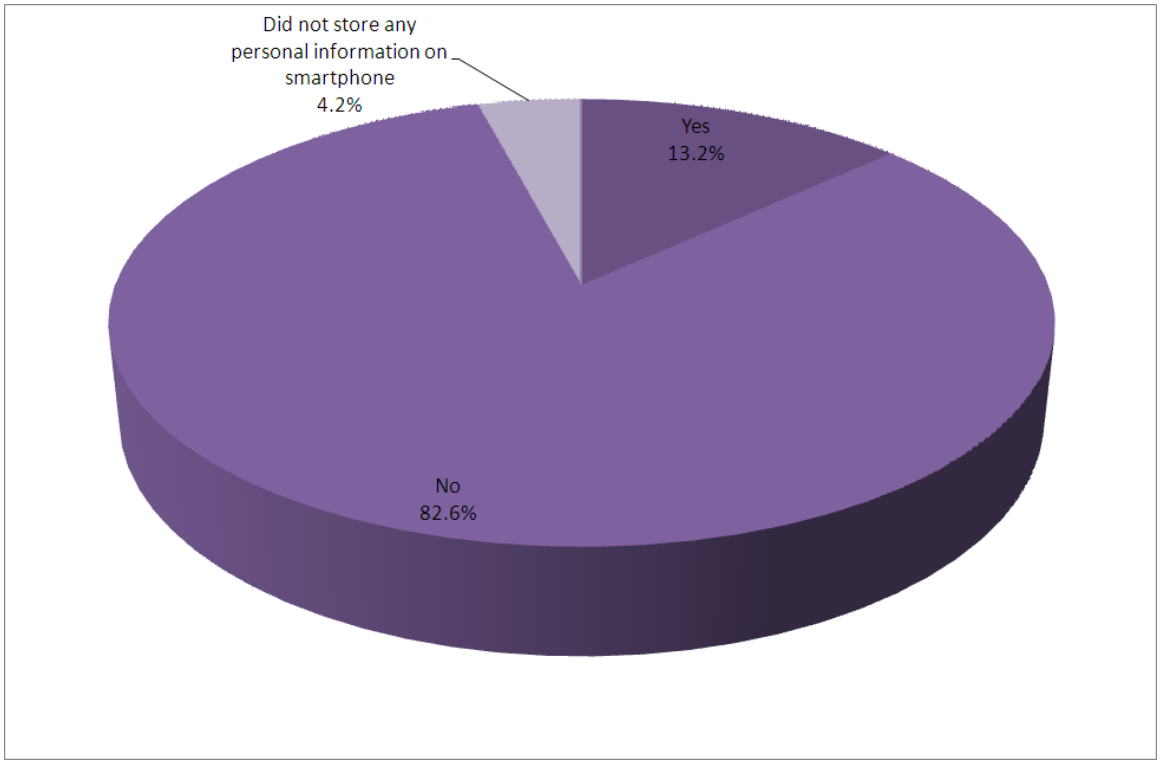
Most of the respondents have stored friends' contact information (85.9%) and email address (63.6%) in their smartphone.

Chart 33: Types of personal information stored in the Smartphone (N=838) – Q12



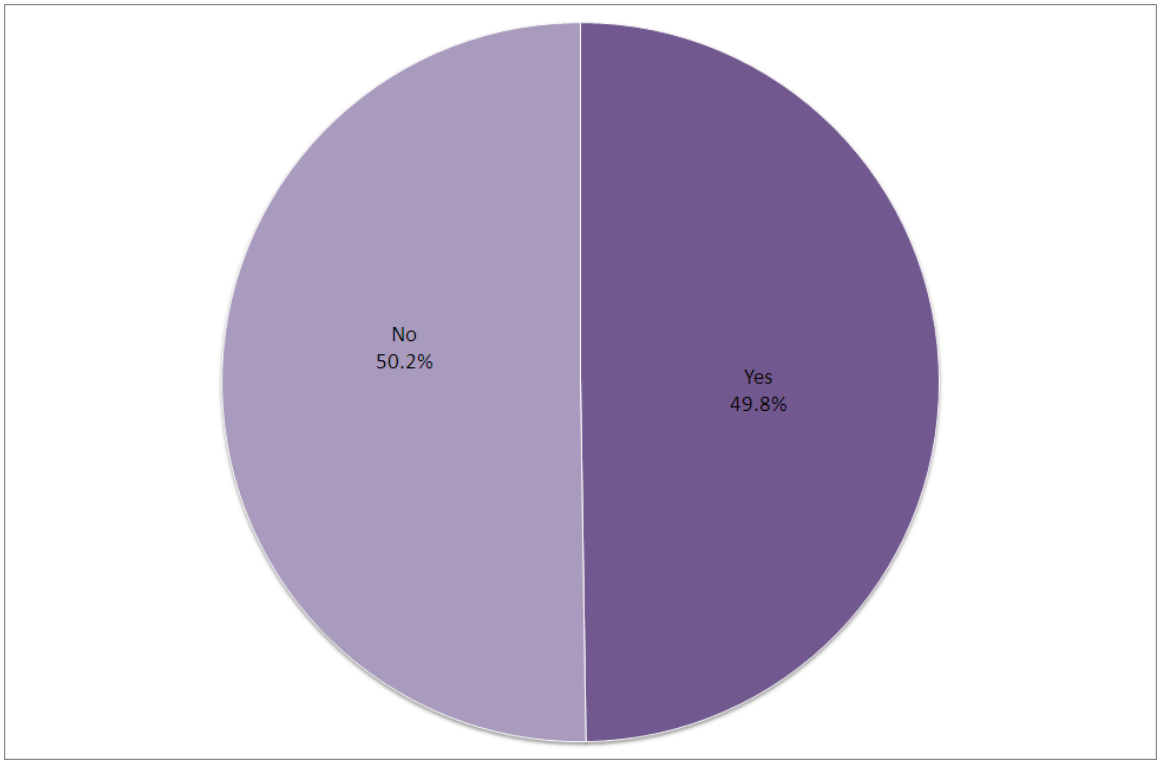
13.2% of respondents used encryption to protect personal information stored in their phones.

Chart 34: Incidence in encrypting personal information on smartphone (N=838) – Q12a



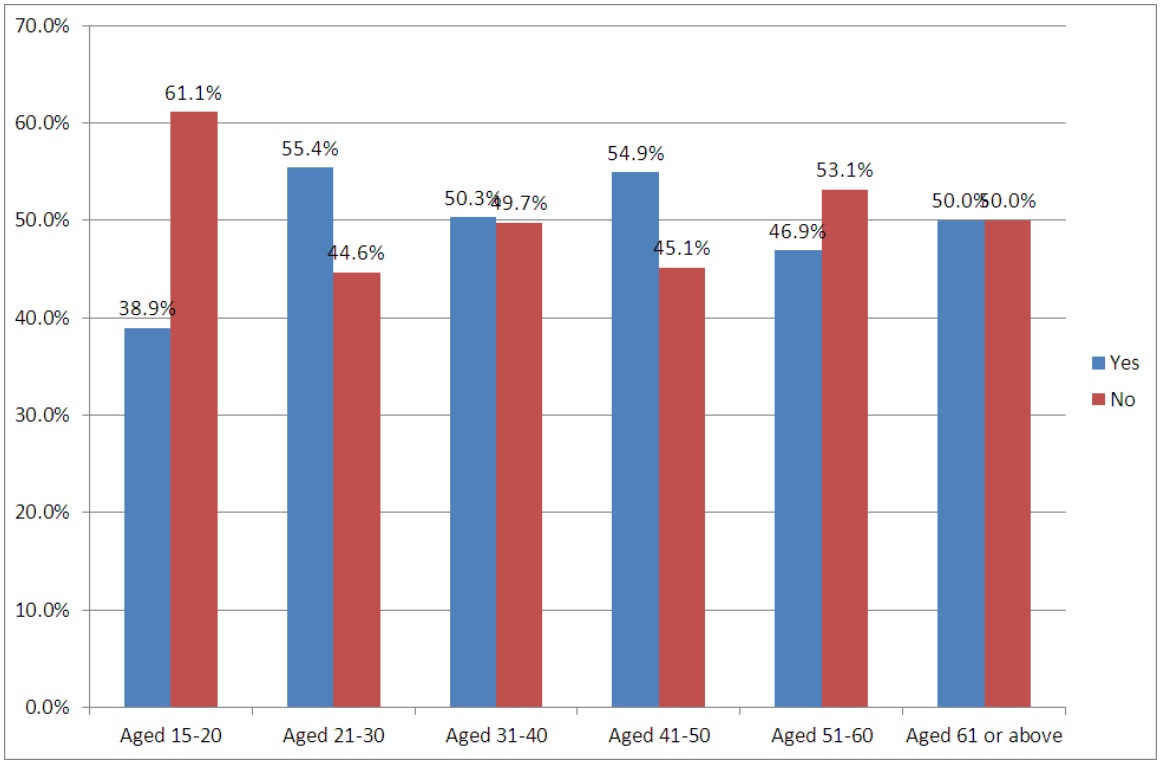
50.2% of respondents were not worried about data leakage when using smartphones or when installing apps.

Chart 35: Incidence in worrying about data leakage (N=838) – Q13



Among respondents in the 15 – 20 age group, more users said that they were not worried about data leakage when using smartphone (61.1% as compared to the overall 50.2%.

Chart 36: Incidence in worrying about data leakage vs Age



Out of the respondents who were worried about the data leakage, most respondents (90) were worried about their contact information would be accessed or stolen. 61 respondents reflected that they were worried about the information stored on the phone would be accessed.

Table 1: Types of data leakage worried by the respondents – Q13a

Type of Data leakage	No. of mentions
Contact information being accessed or stolen	90
Information stored on the phone being accessed	61
Emails of email account being accessed or stolen	39
Passwords being accessed or stolen	37
Credit card information being stolen	20
Photos or videos being accessed	20
Bank account information being accessed or stolen	18
Personal information being accessed or stolen	17
Address being accessed	12
Information of identity card or passport being accessed	11
Illegal usage of personal information	7
Receiving advertising phone calls, messages or emails	7
Personal information being sold or used for marketing	6
Geo-location being accessed or traced	5
Phone being hacked and used for virus spreading	5
Records or contents of phone calls being accessed	4
Message content being accessed	4
Information of online account being accessed	4
Information of ebanking or transaction being accessed	3
Facebook password being accessed	3
Personal information being open accessed or uploaded	3
Phone or other things being stolen	2
Office document or information being accessed	2
Virus invasion of phone	2
Others	12
Don't know	68

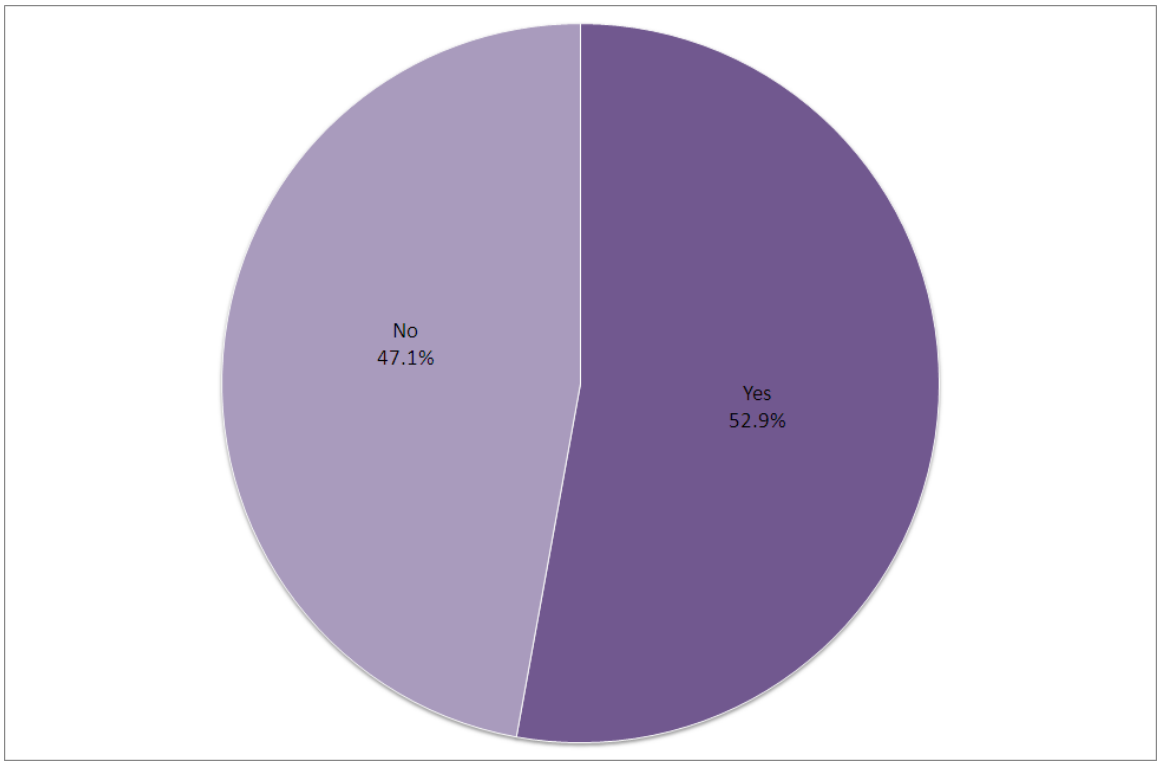
For those who were not worried about data leakage, "Not too much personal information in the phone" was the main reason stated by them.

Table 2: Reasons of the respondents who were not worried about data leakage – Q13b

Reasons	No. of mentions
Not too much personal information in the phone	162
Never considering the problem	30
No personal information in the phone	16
Never downloading and using an app if the app requires personal information input	6
Many people use Smartphone	5
Believing the information cannot accessed or stolen	5
Only installing few apps	4
Reading the terms carefully before downloading the apps	4
Downloading apps only from big companies	4
Downloading hot apps only	4
Believing the app checking by Apple	4
Believing it is safe enough / Believing the security measures of the Smartphone	4
Never / seldom using apps	3
There is screen lock / password setting	3
The risk of data leakage is low	3
Never downloading apps casually	3
Downloading believable or safe apps only	3
Nothing can be done	3
Using the Smartphone only for phone call	2
Using the Smartphone carefully	2
Not important	2
Installing encryption device	2
Installing anti-virus software	2
Do not use commercial apps	2
Encryption program is installed in my phone	2
There must be chance in data leakage when using Smartphone	2
Using fake personal information when downloading apps	2
Personal information are also sold by bank or telecom companies	2
Others	27
Don't know	90

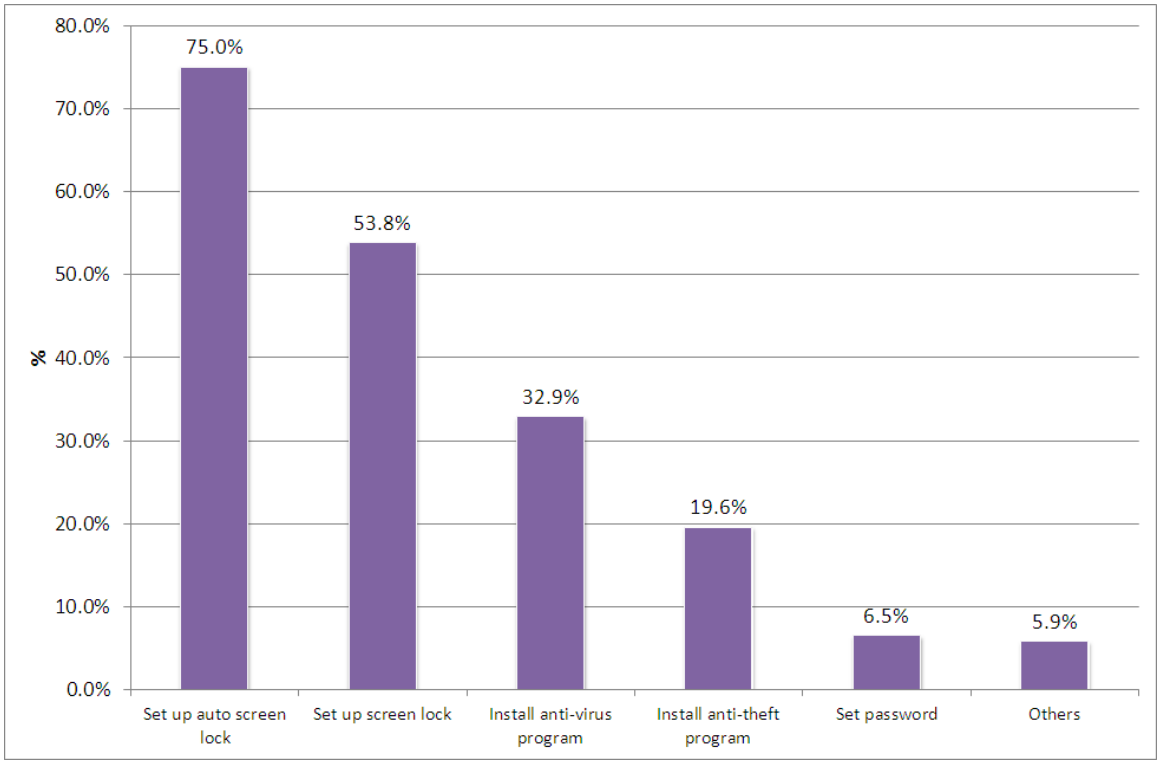
About half (52.9%) of the respondents indicated that they would take steps to protect the confidentiality of the information on their smartphone.

Chart 37: Incidence in taking steps to protect the confidentiality of the information on the smartphone (N=838) – Q14



Among the 444 respondents who took steps in protect the confidentiality of the information on the Smartphone, 32.9% of respondents indicated that they would take steps (screen lock, anti-virus, anti-theft software, etc) to protect information on their smartphones.

Chart 38: Protective actions taken (N=444) – Q14a



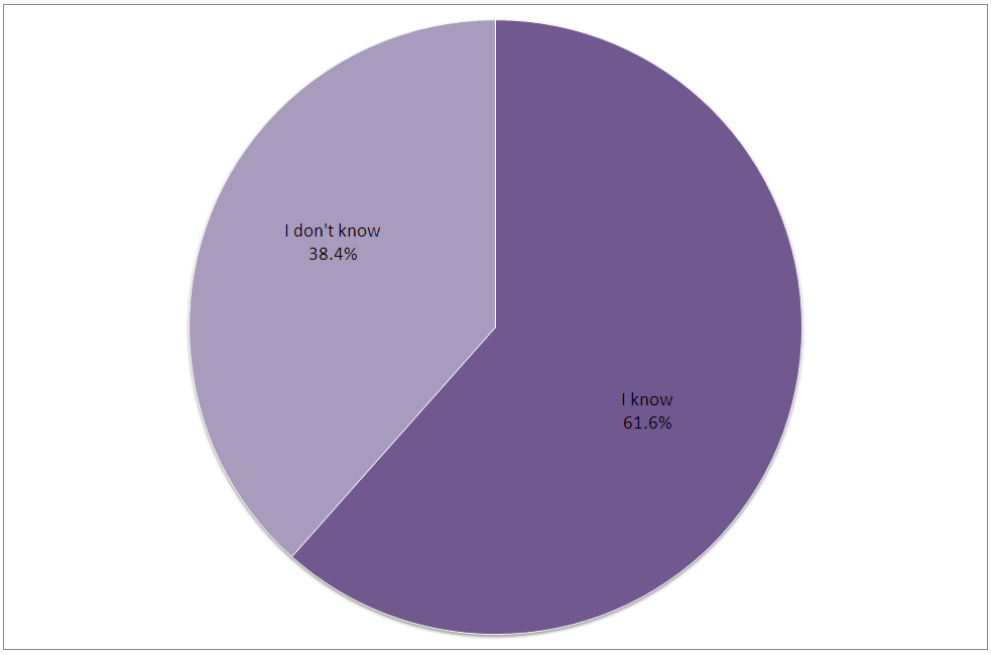
For the respondents who did not take any protective action, most (118) of them reflected that they did not know what protective actions could be taken. 96 respondents stated that they did not take any protective action because there was no / not much personal information in their phone.

Table 3: Reasons states by the respondents who don't take any protective action – Q14b

Reasons	No. of mentions
Don't know what protective actions can be taken	118
No / Not too much personal information	96
Don't want to bother	58
It is safe as the phone is always along with me	14
Don't worry	10
No need	7
Believing that it is safe	7
If the phone is lost, all protective actions can be cracked	3
The protective action is useless	3
The phone is used only by myself	3
Affect the operating speed of the phone or operation of other apps	3
Haven't joined the data service plan	2
Never installing apps / only install few apps	2
It is difficult to steal the personal information from the phone	2
It is a must for data leakage	2
Never being aware of data leakage	2
Others	23
Don't know	39

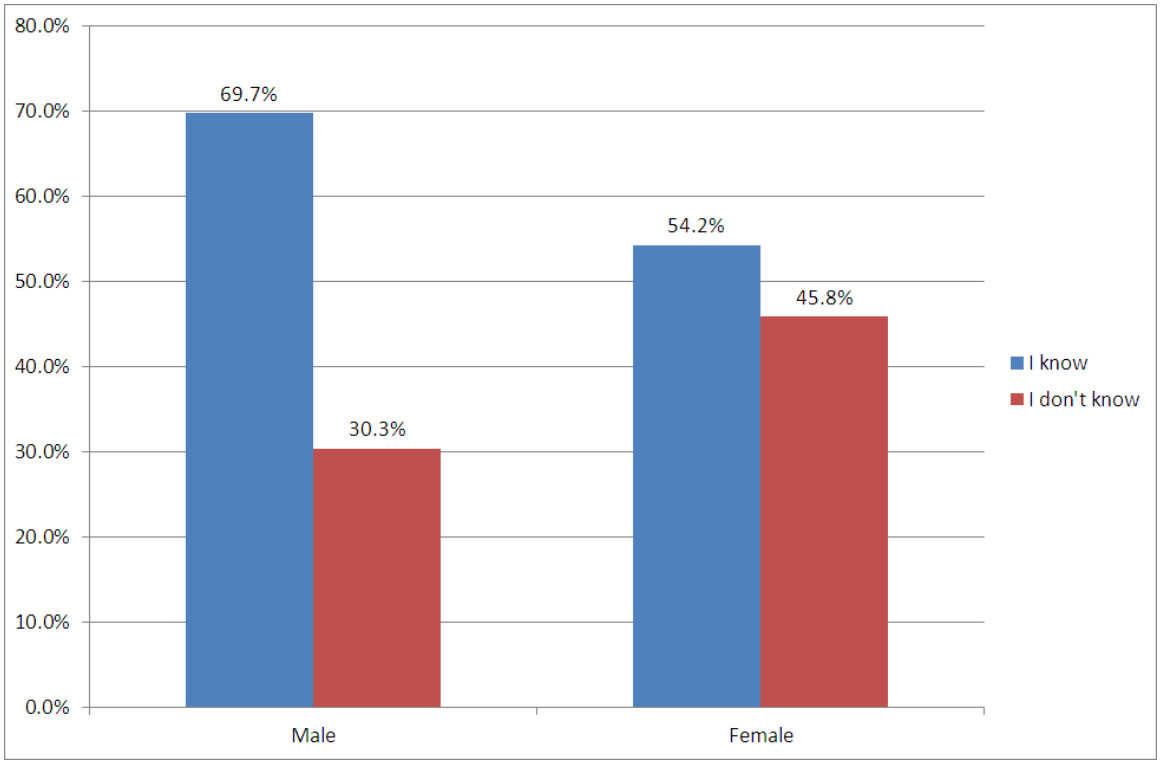
It was found that 38.4% of respondents did not know that location information might be recorded in photos taken on the phone.

Chart 39: Incidence in knowing the location information might be recorded in photos taken on the phone (N=838) – Q17



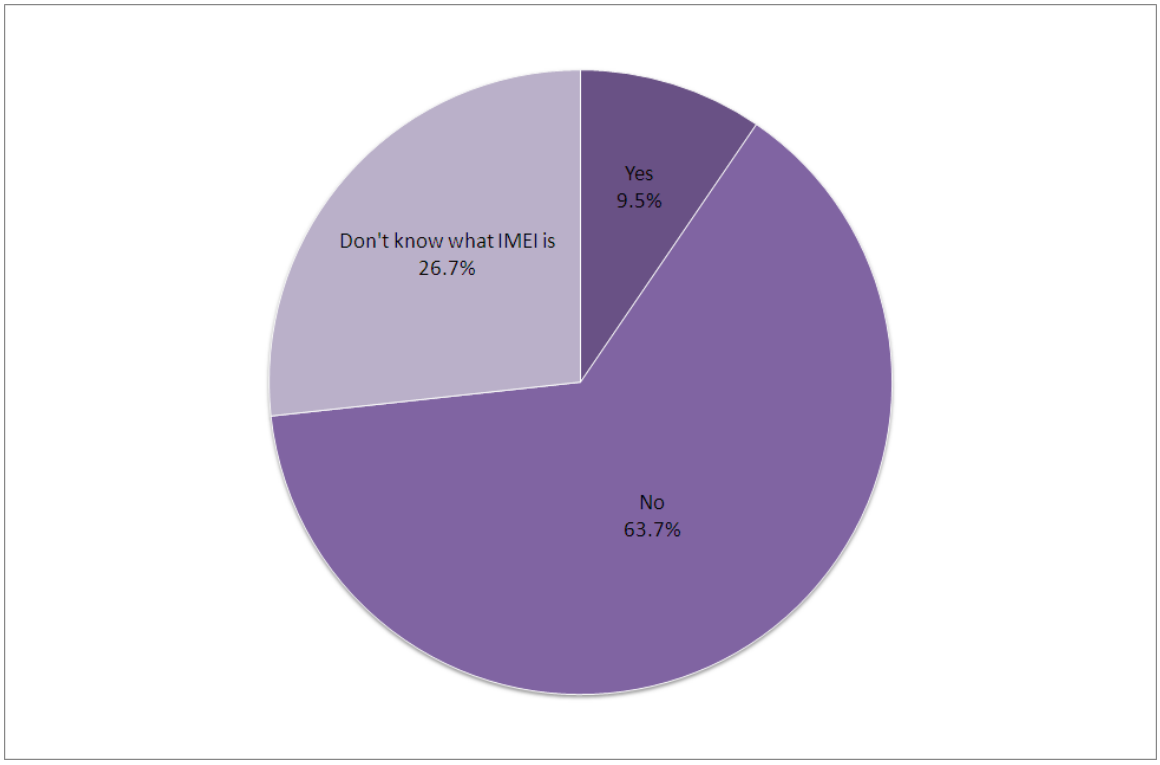
More female respondents (45.8% as compared to the overall 38.4%) were not aware of this than male respondents.

Chart 40: Incidence in knowing the location information might be recorded in photos taken on the phone vs Gender



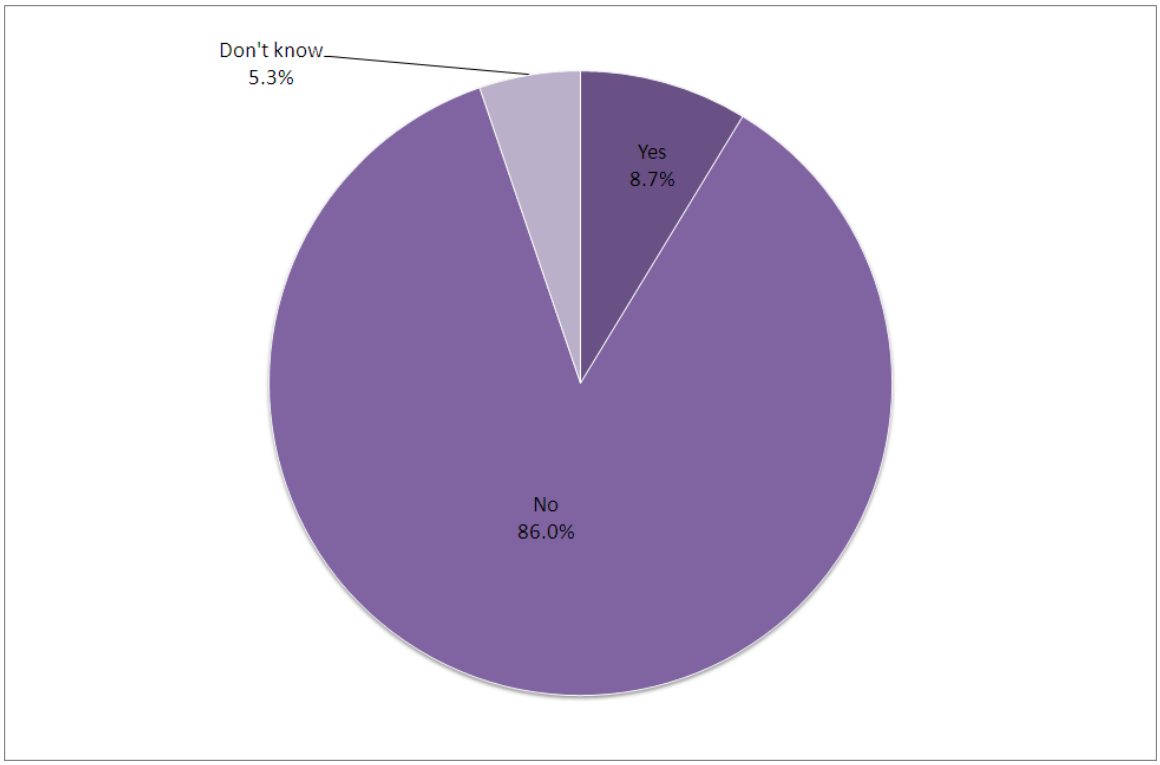
63.7% of the respondents had not written down IMEI code and 26.7% even did not know what the code was.

Chart 41: Incidence in writing down the IMEI code (N=838) – Q18



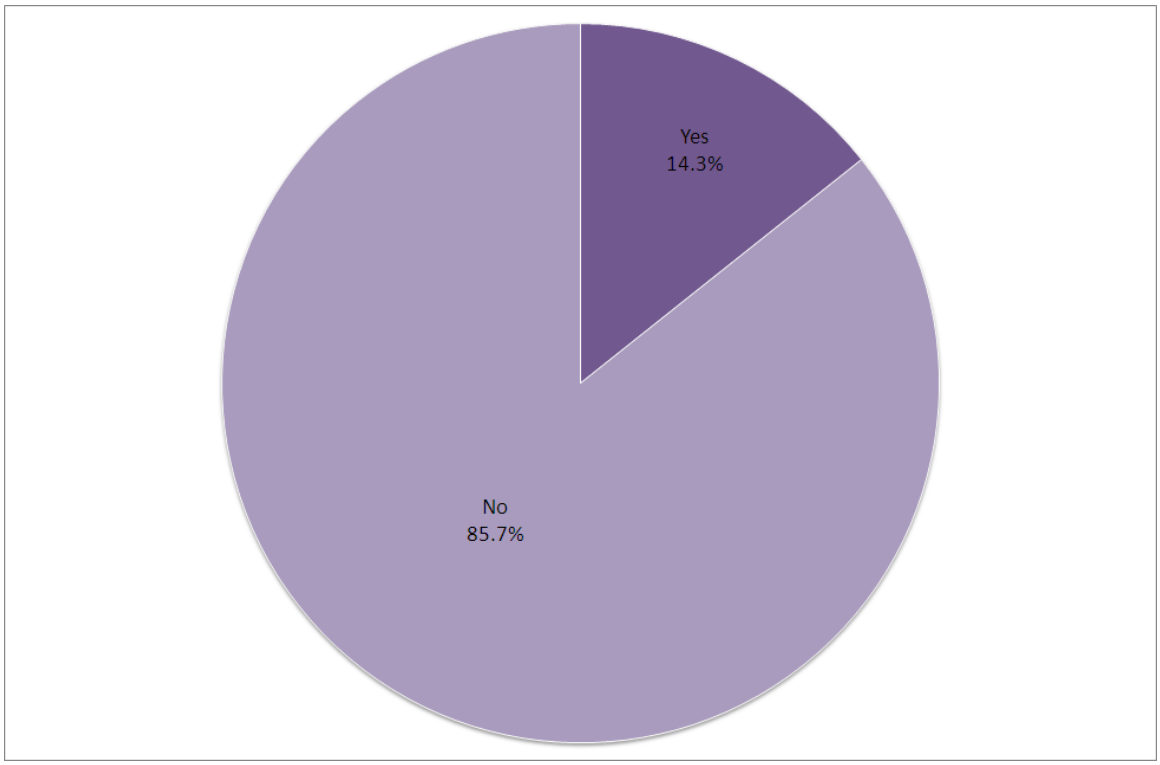
There were 86% of respondents who had not jailbroken or rooted their smartphones.

Chart 42: Incidence in doing any modification (N=838) – Q19



85.7% of respondents had not installed any apps from non-official channels.

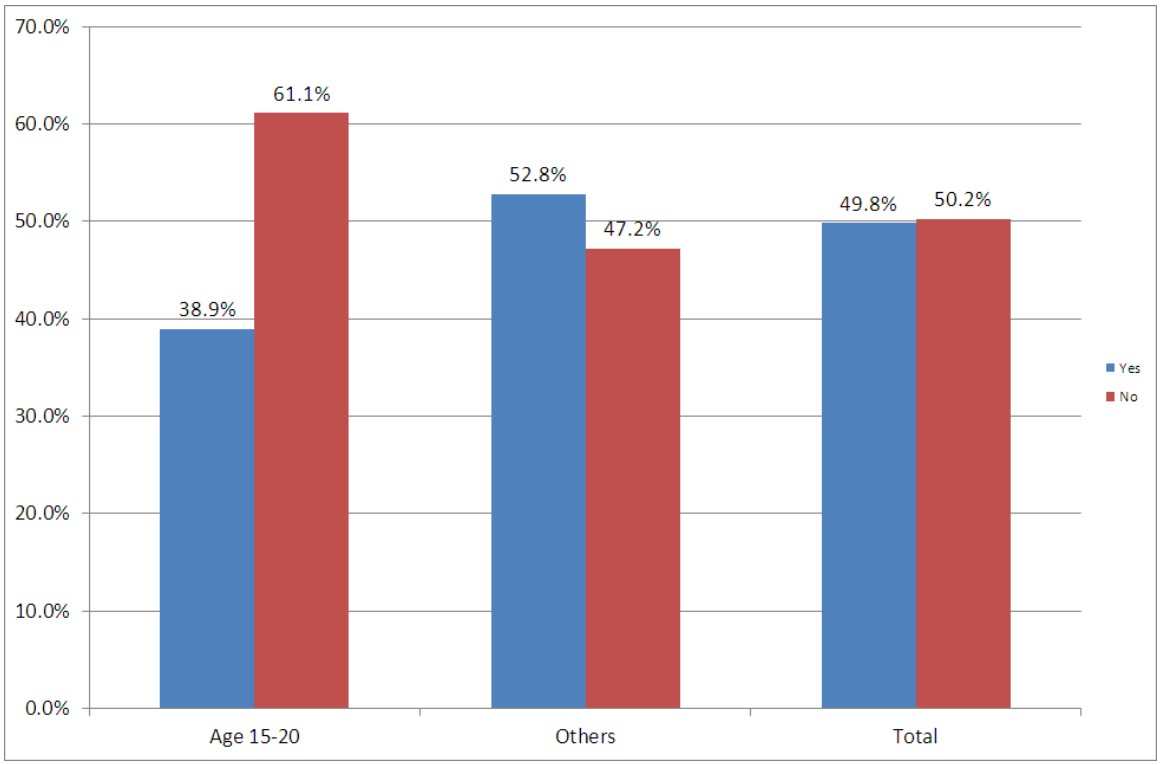
Chart 43: Incidence in installing any apps from non-official channels (N=838) – Q20



4.2.4 Comparison between teenagers and who sample

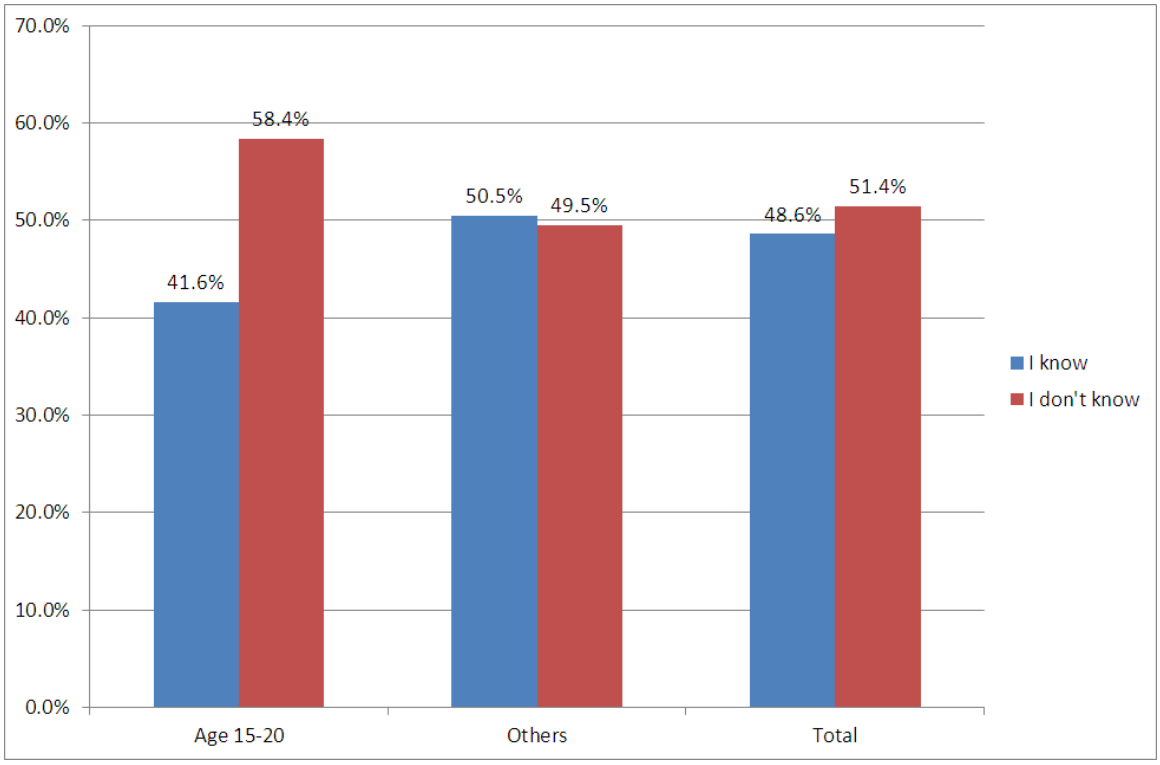
Fewer teenagers (52.8% compared with the overall 38.9%) were worried about exposing their privacy when using smartphones or downloading/using apps.

Chart 44: Incidence in worrying about exposing their privacy vs teenager group



Fewer teenagers (41.6% compared with the overall 48.6%) were aware that their phone books would be uploaded (and hence shared) to a central server when using social network apps.

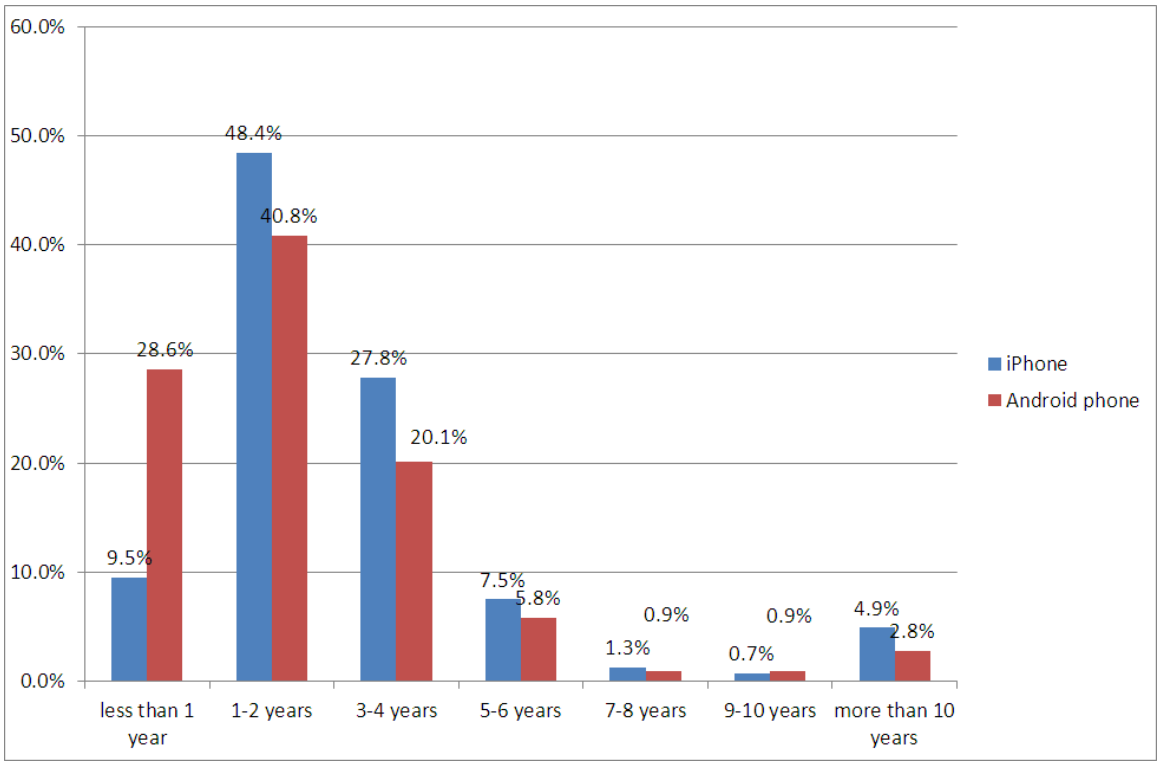
Chart 45: Awareness of phone books would be uploaded to a central server vs teenager group



4.2.5 Comparison between Android and iPhone users

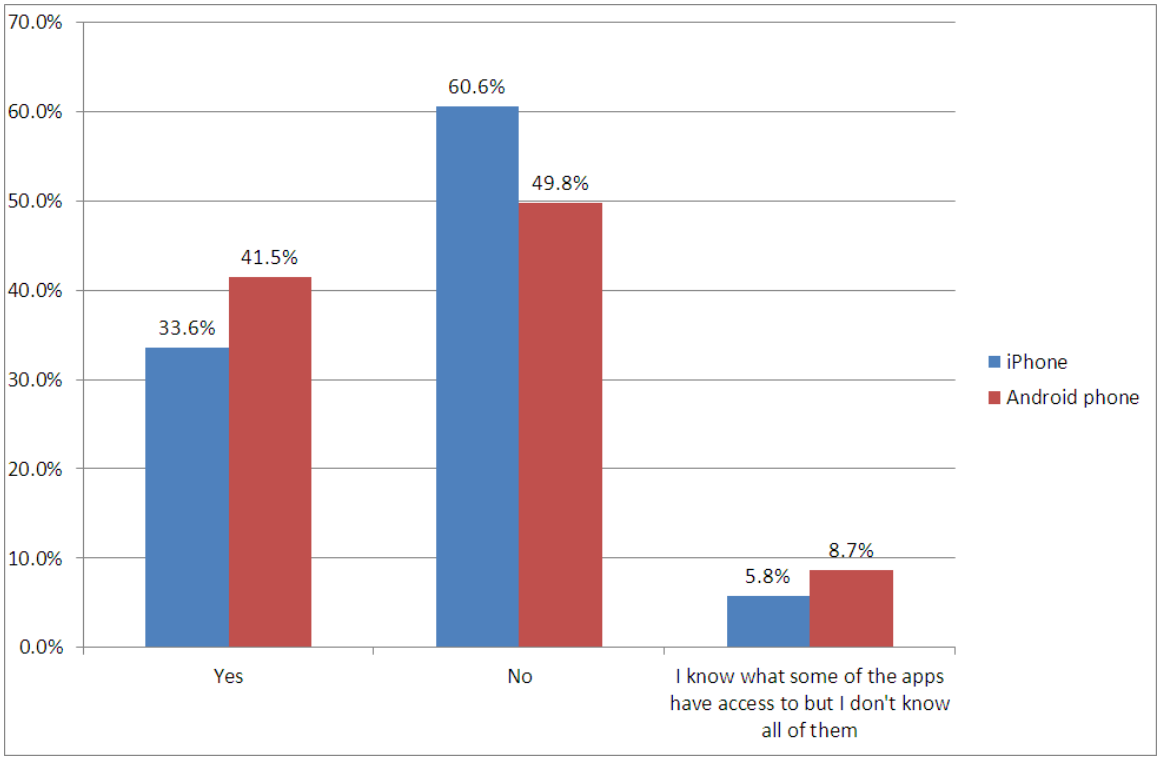
More Android users (28.6%) than iPhone users (9.5%) have used smartphones for less than one year.

Chart 46: Distribution of Android and iPhone users vs Years of using Smartphone



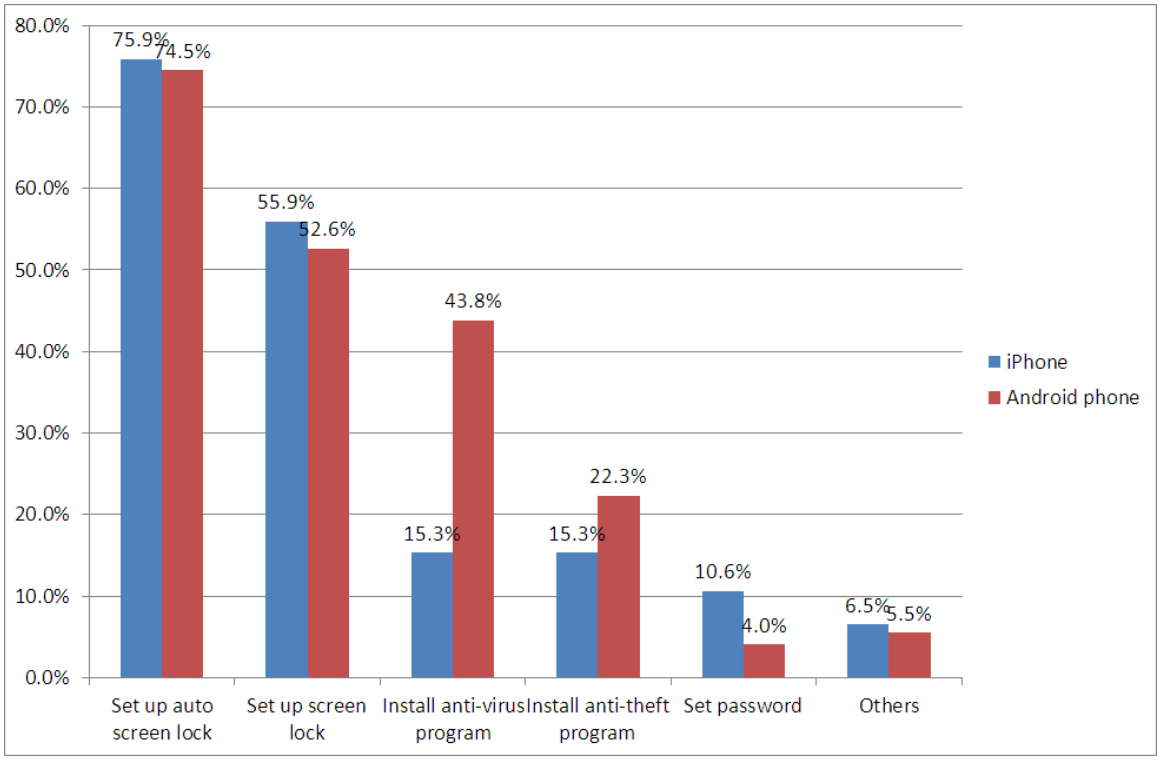
More Android users (41.5%) than iPhone users (33.6%) were aware of what kind of phone information would be accessed by their apps.

Chart 47: Awareness of what kind of phone information would be assessed by apps vs Android and iPhone users



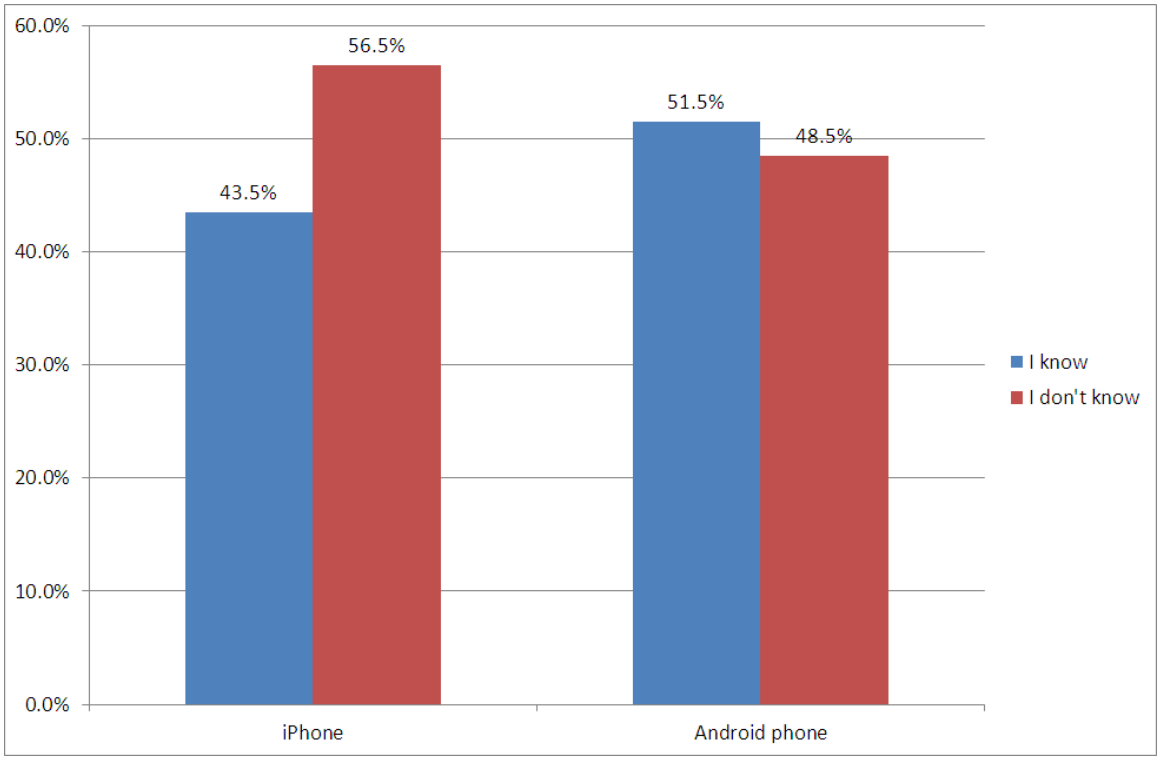
More Android users (43.8%) than iPhone users (15.3%) were installing anti-virus programmes in their phones.

Chart 48: Incidence in installing anti-virus programmes in their phones vs Android and iPhone users



More Android users (51.5%) than iPhone users (43.5%) were aware that their phone books would be uploaded (and hence shared) to a central server when using social network apps.

Chart 49: Awareness of phone books would be uploaded to a central server vs Android and iPhone users



V. CONCLUSION

In order to understand the usage and awareness of personal data collection on smartphone, CASR was commissioned to conduct a survey on the usage habit (particularly their awareness on personal data privacy protection) of smartphones users in Hong Kong.. Telephone interviews were conducted with the target respondents who smartphone users from general public aged between 15 and 70. Finally, 838 successful interviews were conducted for iPhone and Android phone users.

The results showed that more than half of the users are female (52.4%) and most of them are aged 41-50 (23.3%). 44.5% of the respondents are of Secondary education.

In general, the survey results showed that more respondents were using Android (63.5%) than iPhone (36.5%). More than half of respondents used smartphone for text (66.7% communicating with friends with Facebook and Whatsapp, etc.). It was shown that people were using smartphone for text communications than making phone calls (52.9%). 84.7% of respondents considered functionality as a primary factor for choosing smartphones. Only 22.9% of respondents considered "risk of data leakage" when purchasing smartphones.

It was found that 93.6% of respondents installed apps to their smartphones. For those respondents who installed apps, Whatsapps was the most popular app (59.7%). Only 52.6% of them kept count of the apps they installed. In addition, 72.2% of respondents who installed apps periodically checked their installed apps and deleted unused ones.

Furthermore, for respondents who installed apps, 36.0% of them knew what information their apps had access to. There were 58.0% of them indicated that they had not read the terms and conditions clearly or ensured that they understood the apps' access rights before installing the apps. Only 26.8% and 22.6% of them would consider "Privacy Policy" and "Terms and Conditions" as determinants when installing an app.

In addition, it should be noted that 51.4% of respondents did not know that their contact lists might be uploaded to a central server when using social network apps.

Analysis also showed that 70.3% of respondents did not know that apps might secretly access information they had not said they would. It was found that 38.4% of respondents did not know that location information might be recorded in photos taken on the phone.

Overall, 395out of 838 respondents did not took steps in protect the confidentiality of the information on the Smartphone. 56.2% of Android users had not installed anti-virus to protect their smartphones.

60.2% of respondents had not used auto screen lock and 89.6% of respondents did not install anti-theft software to protect their smartphones. Only 13.2% of respondents used encryption to protect personal information stored in their smartphones. In fact, only 50.2% of respondents worried about data leakage when using smartphones or installing apps.

Finally, there were 86% of respondents who had not jailborken or rooted their smartphones and 85.7% of respondents had not installed any apps from non-official channels.

Comparison was also done for comparing views of teenagers and the whole sample, it was found that fewer teenagers (52.8% compared with the overall 38.9%) were worried about exposing their privacy when using smartphones or downloading/using apps. In addition, fewer teenagers (50.5% compared with the overall 41.6%) were aware that their phone books could be uploaded (and hence shared) to a central server when using social network apps.

Comparison was also carried out for comparing users of Android and iPhone users, it was found

that more Android users (28.6%) than iPhone users (9.5%) used smartphones for less than one year. Furthermore, more Android users (41.5%) than iPhone users (33.6%) were aware of the kind of information being accessed by their apps.

It was also found that more Android users (51.5%) than iPhone users (43.5%) were aware that their phone books would be uploaded (and hence shared) to a central server when using social network apps.

This smartphone survey provides a general picture on the use of smartphones and the awareness of personal data protection by Hong Kong residents. It shows that the privacy protection awareness of the following areas could be improved:

1. Users should find out more about what information stored in the smartphone a mobile app will access before installing it;
2. The youth group (aged 15 – 20), who are one of the more active groups of mobile app users, need to pay more attention to what mobile apps they have installed, what access these apps have and review them often;
3. iPhone users need to be aware of iPhone's design characteristics that it will not show comprehensively the type of information an app would need to access prior to, during and after the installation process.

Appendix I – Focus group summary

Summary on focus group discussion

Date: 21st June 2012
Time: 19:00pm – 20:30pm
Venue: Centre for the Advancement of Social Sciences Research, HKBU

Moderator: Dr. Agnes Law (Director, CASR)
Number of Interviewees: 10

Part I. Experience of using smartphone

1. What smartphone are you currently using? What type is it? What system is it?

This is the breakdown of the system of smartphone currently used by the interviewees:

System	smartphone using	Number
Android	Google phone, Samsung, No brand name, HTC	6
Apple	iPhone	2
Nokia OVI	Nokia	1
Blackberry	Blackberry	1

2. Why do you choose to use smartphone?

Participants stated a lot of reasons for choosing to use smartphone. Most of them think that there is a need to use smartphone nowadays. smartphone is a great tool for them in various aspects, for example, communication with friends, checking e-mails for business needs, entertainment, and gathering information.

Reasons to use smartphone listed by participants:

- Persuaded by mobile phone service provider
- Need to communicate with peers
- Convenient, and easy to use
- Business needs (checking emails instantly and using Excel, Word etc.)
- Entertainments (games, photo-taking)
- Can use communication tools (whatapps, facebook, use internet)
- To replace notebook
- Has GPS function

3. What do you usually do with smartphone? Could you list out?

The participants do a number of things using smartphone, the following summarizes the examples given by them:

Watching video	**Youtube**
	PPStream
	MyTV
	Youku
	Todou
Games	Angry Birds
	Strategic games
Informational	MTR Map
	Google Map
	Observatory
	Stock / bank services
	Radio
	Newspaper
Personal usage	Calendar
	Checking E-mails
	Taking photos
Social networking	Facebook
	Whatsapp

4. Could you prioritize your different usages of smartphone? Why?

Participants listed six things they mostly do in smartphone as follows:

i. Photo-taking
ii. Whatsapp
iii. Checking e-mails
iv. Facebook
v. Newspaper/ Forum/ News group
vi. Openrice

5. What kind of apps have you installed in your smartphone? Which smartphone apps do you usually use? Why?

Participants listed the apps they have installed and have usually used in smartphone as follows:

i. Google Map
ii. Apps for calling Taxi
iii. Observatory
iv. Calendar
v. Openrice
vi. Games
vii. Apps for calculating calorie
viii. Apps for tuning guitar
ix. Dictionary
x. MSN

6. Do you know how many have you installed? Do you un-install them if you no longer use them? How do you keep track of what you have installed?

Participants indicated that they have installed 10 to 60 apps in their smartphone. Four of them have installed eight to ten apps while two of them have installed ten to twenty. The other two participants have installed thirty to forty apps and only one participant reported that he has installed more than sixty apps.

Among the participants, only five indicated that they will keep track of what they have installed and may update or delete when necessary. Few will delete the unnecessary apps immediately or in one week. One will delete until the smartphone is short of memory.

7. What does smartphone mean to you? (Convenient; Fashionable; High technology; Communication tool, Identity [peer pressure] etc.) Why?

Most of the participants think that smartphone is not fashion but a trend instead. It represents technological innovation in a new era. They agree that smartphone nowadays is somehow irresistible as they have taken it as part of their life.

To compare with the traditional mobile phone, a remarkable feature that makes smartphone fashionable is that user can change the suitcase of smartphone at anytime without difficulty and it makes the smartphone to be more personal and unique.

Part II. Awareness of the risk and security of using smartphone

1. What personal information did you put in your smartphone? Why are you (not) putting it? Have you ever stored non-contact (account numbers, pins, and access codes) in your address book?

Most of the participants reported they have put the telephone number of their friends, photos, email address or account ID in the smartphone. One of them said that he put the information of his bank account for reminding him when he needs it. However, they will not put in other important personal information into the smartphone as they think it is not a necessary and somehow a dangerous move.

2. Did you notice any privacy risk for using smartphone and the apps?

Three participants reported that they have noticed the privacy risk for using smartphone and apps in a primary level and the rest of the participants have never noticed this risk in any ways.

3. Do you have concern on privacy in using smartphone? Why do you think there is (not) a concern?

Participants who noticed the risk of privacy stated that they are a bit afraid that their personal information such as Facebook account, e-mail address would be stolen and used in other purposes by others. However, some participants think that those information are not really important as they think they could open another one (account or email address) easily.

4. Do you know your address books are being uploaded to central servers if they use any social network apps?

Nine of them indicated that they know that their address books are being uploaded to central servers if they use social network apps and have already change the setting by themselves as they think it is very dangerous.

Only one participant does not know it.

5. Do you know all photo's geo-locations are tagged by default if you use the phone to take pictures?

All participants stated that they do know all photo's geo-locations are tagged by default if they take pictures by smartphone.

6. What do you do to protect your personal data when using smartphone? What security steps you use to protect your personal data (Do you install any security tool (anti-virus, anti-theft) in smartphone?) Do you think it is enough? Why? (If no, why?)

All participants indicated that they will not install any security tool to protect their personal data as they think it is not worth to invest at all. The only security step they will do is setting password in their smartphone.

7. What factor do you concern most when you are going to purchase a smartphone? What's next? How about the security of privacy?

Only one participant would consider security of privacy. Other participants indicated that they would consider other factors more such as function and maintenance services.

8. What factor do you concern most when you are going to download/install an app? What's next? How about the security of privacy? Do you read details of apps before installing?
[For Android user] Do you know that Android apps must tell users what they will access?
[For iOS user] Do you know that you would not be told what information will be accessed (except location)? Do you know that there is a central place to check/adjust the permission status of apps to access geo-location info?

The followings are the factors that the participants concern most when they are going to download/install an app:

i. Popularity
ii. Rating or comment to the apps
iii. Function
iv. Necessity
v. Convenience
vi. Price

Most of the participants would not read details of apps before installing. Only one participant said that he consider the security of privacy as well because he does not want his personal life to be invaded.

Android users said that they do not know Android apps must tell users what whey will access. iOS users, however, know that they would not be told what information will be accessed but they think that it is unavoidable and do not consider it as a problem.

9. Do you know apps may say they do one thing but secretly do another thing? If you do, what do you do to make sure that you do not install such fake/malicious apps?

A few participants indicated that they have ever experienced this situation and normally they would stop using the apps if they found anything improper.

Part III. Reasons for not using smartphone/Facebook

1. Have you ever considered stop using smartphone? What are the reasons?

Almost all participants think that they cannot stop using smartphone now because of the following reasons:

i. There are no other better choices currently in the market (e.g. photo taking function)
ii. smartphone is too convenient for them and becomes part of their life.
iii. Business needs (e.g. whatsapp, msn etc.)

Only one participants think that he may change back to use old-fashioned mobile phone because of the lack of humanity in using smartphone.

2. Do you use Facebook?
[For non-Facebook user] Why do you not to use Facebook?

Two participants stated that they do not like to use Facebook because they think it is a waste of time and the quality and quantity of friends in Facebook are hard to control. One of them has ever deleted Facebook because of the annoyance caused to him.

3. Do you have friends not using smartphone? Why?

Some participants reported that they do have friends not using smartphone because of the following reasons:

i. They think it is not necessary for them to use smartphone.
ii. They are used to use old-fashioned mobile phone and do not want to make changes.
iii. They feel uncertain about new technologies, hence concern about the privacy issue.

Appendix II – Questionnaire

<u>第一部分：自我介紹</u>

先生/小姐/太太 您好，我姓 X，我係浸會大學社會科學研究中心 o 既訪問員 o 黎 o 既，我地受私隱專員公署委託做緊一項有關使用智能手機 o 既情況 o 既研究，希望阻您少少時間。請您放心，您提供 o 既資料係會絕對保密 o 既。

<u>第二部分：甄選問題</u>

S1. 請問你屋企有冇 15 至 70 歲 o 既人仕係有使用智能手機 o 既呢?

1. 有 → go to S2
2. 沒有→ 訪問結束 [CATI will record the number of households who answer "no" for calculating the penetration]

S2. 請問有幾多位呢? ____ 位 (如果多於一位，麻煩請最近生日 o 個位 o 黎聽電話)

<u>第三部分：主問卷</u>

Q1. 請問你用 o 左智能手機幾耐呢? (不讀出) (單選)

1. 少過一年
2. 1-2 年
3. 3-4 年
4. 5-6 年
5. 7-8 年
6. 9-10 年
7. 10 年以上

Q2. 請問你用緊咩牌子 o 既智能手機呢? (不讀出) (單選)

1. iPhone (skip to Q4)
2. Nokia (go to Q3a)
3. Blackberry (skip to Q4)
4. Samsung (go to Q3b)
5. HTC (go to Q3c)
6. LG (go to Q3d)
7. Motorola (go to Q3e)
8. Sony Ericsson / Sony (go to Q3f)
9. 其他牌子：(請註明) _____ (go to Q3g)

Q3a. 咁你 o 既 Nokia 手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Windows Phone
2. Windows Mobile
3. Symbian
4. MeeGo
5. 其他 (請註明) ：_____
6. 不知道

Q3b. 咁你 o 既 Samsung 手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Android
2. Windows Phone
3. Windows Mobile
4. Bada
5. Symbian
6. 其他 (請註明) ：_____
7. 不知道

Q3c. 咁你 o 既 HTC 手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Android
2. Windows Phone
3. Windows Mobile
4. 其他 (請註明) ：_____
5. 不知道

Q3d. 咁你 o 既 LG 手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Android
2. Windows Phone
3. Windows Mobile
4. 其他 (請註明) ：_____
5. 不知道

Q3e. 咁你 o 既 Motorola 手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Android
2. Windows Mobile
3. 其他 (請註明) ：_____
4. 不知道

Q3f. 咁你 o 既 Sony Ericsson / Sony 手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Android
2. Windows Mobile
3. Symbian
4. 其他 (請註明) ：_____
5. 不知道

Q3g. 咁你 o 既手機係用咩系統運作 o 既呢? (讀出) (單選)

1. Android
2. Windows Mobile
3. Web OS
4. Palm OS
5. Symbian
6. 其他 (請註明) ：_____
7. 不知道

Q4. 點解你會選擇用智能手機呢? (不讀出) (複選)

1. 潮流
2. 同用緊智能手機 o 既朋友溝通 (例如：Whatsapp)
3. 上網 (例如：Facebook)
4. 收發電郵
5. 工作需要
6. 打機/娛樂
7. 手提電話網絡供應商推廣 (例如：零機價、月費優惠)
8. 方便/易用
9. 影相
10. 功能多
11. 市場上冇乜其他非智能手機的選擇
12. 其他 (請註明) ：_____

Q5. 你最常用智能手機做乜 o 野呢? (讀出) (可選三項)

1. 睇影片
2. 睇漫畫
3. 睇書
4. 講電話
5. 玩遊戲
6. 聽收音機
7. 尋找資訊 (如地圖、天氣、股市、閱報、Openrice 等)
8. 同朋友聯繫 (如 Facebook, whatsapp)
9. 收發電郵
10. 影相
11. 使用日曆記事
12. 處理文件
13. 瀏覽網頁
14. 其他 (請註明)：_____

Q6. 你有冇 o 係智能手機安裝 apps (應用程式)呢? (讀出) (單選)

1. 有 → go to Q7
2. 冇 → skip to Q12

Q7. 邊 D apps 係你最常用呢? (不讀出) (可選五項)

1. Whatsapp
2. Line
3. Google map
4. 電召的士 Apps
5. 天氣 (例如：天文台)
6. Openrice
7. 各種遊戲 (請註明)：_____
8. 卡路里計算器
9. 字典
10. MSN
11. 報紙/雜誌
12. 電視 Apps (例如：MyTV, Cable TV, Now, ppstream)
13. Youtube
14. Facebook
15. 投資 (例如：股市、樓市)
16. 相片處理
17. 文書處理
18. 交通資訊(例如：KMB、MTR)
19. 其他 (請註明)：_____

Q8. 請問你知唔知自己下載左幾多個 apps 呢? (不讀出) (單選)

1. 知道
2. 唔知道

Q9. 你會唔會定期檢視已下載 o 既 apps 並且刪除冇用 o 既 apps 呢?
(不讀出) (單選)

1. 會
2. 唔會

Q10. 你知唔知你下載 o 既 apps 會得到你手機入面邊 D 資料? (不讀出) (單選)

1. 知道
2. 唔知道
3. 有 D apps 知, 有 D 唔知

Q10a. 你決定係咪下載一個 apps 之前，會唔會睇清楚相關條款或確定知道個 apps 會拎手機入面邊 D 資料? (不讀出) (單選)

1. 會
2. 唔會
3. 有 D apps 會，有 D 唔會

Q11. 請問你下載 apps 時會考慮 D 咩呢? (讀出) (複選)

1. 受歡迎程度
2. 用家的評論
3. 功能
4. 需要用的程度
5. 使用是否方便
6. 下載是否快捷
7. 下載是否收費/價格
8. 私隱條例
9. 條款及條件
10. 其他 (請註明)：_____

Q12. 你 o 係智能手機入面輸入左邊類型 o 既個人資料呢? (讀出) (複選)

1. 朋友的電話、電郵等聯絡資料
2. 自己的戶口/信用卡密碼
3. 大廈密碼
4. ATM 櫃員機密碼
5. 自己的網上用戶號碼
6. 自己的網上用戶密碼
7. 自己的電郵地址
8. 自己的電郵密碼
9. 個人敏感的相片
10. 其他資料，(請註明)：_____
11. 冇輸入任何個人資料 → skip to Q13

Q12a. 咁你輸入 o 既個人資料會唔會用亂碼程式加密呢? (不讀出) (單選)

1. 會
2. 唔會

Q13. 你有冇擔心使用智能手機或者下載 apps 會有私隱外洩危機呢? (不讀出) (單選)

1. 有 → Q13a
2. 冇 → Q13b

Q13a. 你擔心 D 咩私隱外洩危機呢?

_____

Q13b. 點解唔擔心呢? _____

Q14. 你有冇做任何保密措施呢?(不讀出) (單選)

1. 有 -> go to Q14a
2. 冇 -> go to Q14b

Q14a. 係咩措施呢? (讀出) (複選)

1. 設置自動關閉屏幕及鎖定手機功能 (auto screen lock)
2. 設置手動關閉屏幕及鎖定手機功能 (screen lock)
3. 安裝防毒程式 (Anti-virus)
4. 安裝防盜程式 (Anti-theft)
5. 其他(請註明)：_____

Q14b. 點解冇做任何保密 o 既措施呢?
(如答"冇需要"，請追問點解會覺得"冇需要")

_____

Q15. 你知唔知道用社交網絡 apps o 既時候，你 o 既通訊錄有機會被上載到中央伺服器呢? (不讀出) (單選)

1. 知道
2. 唔知道

Q16. 你知唔知有 D apps 會做一 D 唔係佢地所講 o 既功能呢? (例如晌無通知你 o 既情況下上載你手機上 o 既資料) (不讀出) (單選)

1. 知道
2. 唔知道

Q17. 你知唔知道你用智能手機影相 o 既時候，你影 o 既相片 o 既地理位置可能會被存放晌相片入面 o 既呢? (不讀出) (單選)

1. 知道
2. 唔知道

Q18. 你有無寫低你 o 既 IMEI 號碼呢? (不讀出) (單選)

1. 有
2. 無
3. 唔知道什麼是 IMEI

Q19. 你有無安裝 jailbreak/root 之類 o 既解鎖程式? (不讀出) (單選)

1. 有
2. 無
3. 唔知道

Q20. 你有無 o 係非正式(例如黑市)市場下載程式? (不讀出) (單選)

1. 有
2. 無

Q21. 請問你購買智能手機 o 既時候會考慮咩因素呢? (讀出) (複選)

1. 功能
2. 價格
3. 維修/保養服務
4. 品牌知名度
5. 型號的新舊
6. 外觀設計
7. 私隱外洩的危機
8. 其他 (請註明)：_____

第四部分：有關 **Facebook**

Q22. 請問你有冇用 Facebook 呢? (不讀出) (單選)

1. 有 → skip to D1
2. 冇 → go to Q24

Q23. 點解你冇用 Facebook 呢? (不讀出) (複選)

1. 不知道 Facebook 是什麼
2. 浪費時間
3. 很難控制 Facebook 上朋友的質素
4. 冇興趣睇朋友 o 既動態
5. Facebook 欠缺私隱
6. 其他 (請註明)：_____

第五部分：個人資料

最後，我想問你些少個人資料，方便分析，請你放心，你 o 既資料係會絕對保密 o 既。

D1. 性別 (不讀出)

1. 男
2. 女

D2. 年齡

1. 15-20 歲
2. 21-30 歲
3. 31-40 歲
4. 41-50 歲
5. 51-60 歲
6. 61 歲或以上
7. 拒絕回答

D3. 教育程度

1. 小學或以下
2. 中學
3. 預科
4. 專上非學位
5. 專上學位或以上
6. 拒絕回答

D4. 職業

1. 經理及行政人員
2. 輔助專業人員
3. 服務工作及商店銷售人員
4. 專業人員
5. 文員
6. 漁農業熟練工人
7. 工藝及有關人員
8. 機台及機器操作員
9. 非技術工人
10. 家庭主婦 →問卷完
11. 學生 →問卷完
12. 失業/待業 →問卷完
13. 退休 →問卷完
14. 其他 (請註明)： _____
15. 拒絕回答

D5. 個人每月平均收入 (包括雙糧、花紅等)

1. HK$5,000 以下
2. HK$5,000 至 9,999
3. HK$10,000 至 14,999
4. HK$15,000 至 19,999
5. HK$20,000 至 29,999
6. HK$30,000 至 39,999
7. HK$40,000 至 49,999
8. HK$50,000 至 59,999
9. HK$60,000 至 69,999
10. HK$70,000 至 79,999
11. HK$80,000 或以上
12. 拒絕回答

[問題已經完成，多謝你接受訪問]

Appendix III – Lists of "Game" and "Other" apps (Q7)

List of "Game" apps

Games	No. of mentions
Angry Birds	26
Mahjong games	12
Jewel	7
Dou Di Zhu (Lord Card)	6
Coin Dozer	4
Mushroom Garden	4
Shooting games	4
Sudoku	4
Mega Jump	3
Temple Run	3
Draw Something	3
Poker games	3
Racing games	3
Tetris	3
Fruit Ninja	2
Action games	2
Adventure games	2
IQ games	2
Japan Life	2
Photo Hunt games	2
Pop Star	2
Puzzle games	2
Various games	2
Where's My Water	2
Bowling games	1
Against War	1
Boyaa game series	1
Brick games	1
Bubble Mania	1
Card Games	1
Catching Butterfly	1
Coca-Cola Music Game	1
Doodle God	1
Dragon Force	1
Farm operation games	1
FLcommando	1

Games	No. of mentions
Hatsune Miku Project Diva	1
Killer of Three Kingdom Online	1
Little Empire	1
Mahjong World	1
Marble Saga	1
Mega Run	1
Mouse Trap	1
My Xbox LIVE	1
One Touch Drawing	1
Oven Break	1
Pocket Planes	1
Puzzles	1
Puzzles for children	1
Restaurant City	1
Smurfs' Village	1
Sports games	1
Texas hold'em Poker	1
Three Kingdoms RPG games	1
Water Capacity	1
Word puzzle	1

List of "Other" apps

Others	No. of mentions
Bible	4
Google+	3
Play Store	3
Yahoo	3
Baby Kingdom	2
Comic	2
GPS	2
Junk Call Filter	2
Sports	2
Travel	2
Hong Kong Jockey Club	1
Anti-virus apps	1
Apps for kids (Kids Songs)	1
Apps to improve performance	1
Barcode apps	1
Calculator	1
Calendar	1
Comic app	1
Credit card promotion	1
Diary	1
eBanking	1
Education	1
Education Kingdom	1
Emoji	1
English learning apps	1
Find My iPhone	1
Goal.com (Football)	1
HK Discuss	1
HK Reporter	1
HSBC	1
Japanese learning app	1
Notepad	1
Portable Hotspot (Wi-Fi)	1
QR Code	1
Screen Lock	1
SnowApp (Screensaver)	1
Taobao	1
TED talk	1
Timer	1

Others	No. of mentions
Travel information	1
Useful telephone list of Hong Kong	1
Video	1
Wallpaper	1
Wilson Android App	1

Appendix IV – Frequency table for all questions in the questionnaire

Q1. How long have you been using smartphone?

	Frequency	Percent	Valid Percent	Cumulative Percent
less than 1 year	181	21.6	21.6	21.6
1-2 years	365	43.6	43.6	65.2
3-4 years	192	22.9	22.9	88.1
5-6 years	54	6.4	6.4	94.5
7-8 years	9	1.1	1.1	95.6
9-10 years	7	.8	.8	96.4
more than 10 years	30	3.6	3.6	100.0
Total	838	100.0	100.0	

Q2. Which brand of smartphone are you using?

	Frequency	Percent	Valid Percent	Cumulative Percent
iPhone	306	36.5	36.5	36.5
Samsung	351	41.9	41.9	78.4
HTC	61	7.3	7.3	85.7
LG	27	3.2	3.2	88.9
Motorola	10	1.2	1.2	90.1
Sony Ericsson / Sony	73	8.7	8.7	98.8
Others	10	1.2	1.2	100.0
Total	838	100.0	100.0	

$Q4 Why do you choose to use smartphone?

	Responses		Percent of Cases
	N	Percent	
Trend	127	10.5%	15.9%
Stay in touch with friends who use smartphone (e.g. whatsapp)	60	4.9%	7.5%
Web surfing (e.g. Facebook)	136	11.2%	17.0%
Sending emails	19	1.6%	2.4%
Needs of work	39	3.2%	4.9%
Playing games / Entertainment	45	3.7%	5.6%
Promotion from mobile network provider (e.g. $0 handset price, monthly plan discount)	19	1.6%	2.4%
Convenient / Easy to use	501	41.3%	62.7%
Photo shooting	9	0.7%	1.1%
Multiple functions	160	13.2%	20.0%
There are few "non-smartphone" choices in the market	38	3.1%	4.8%
Others	61	5.0%	7.6%
Total	1214	100.0%	151.9%

a. Dichotomy group tabulated at value 1.

$Q5 What do you most commonly used smartphone for?

		Responses		Percent of Cases
		N	Percent	
	Watching videos	91	4.0%	10.9%
	Reading comics	19	0.8%	2.3%
	Reading e-books	33	1.5%	3.9%
	Making phone calls	443	19.5%	52.9%
	Playing games	168	7.4%	20.0%
	Listening to radio	34	1.5%	4.1%
	Looking for information (e.g. Map, Weather, Stock, Newspaper, Openrice)	244	10.7%	29.1%
	Communicating with friends (e.g. Facebook, whatsapp)	559	24.6%	66.7%
	Sending or receiving email	177	7.8%	21.1%
	Taking a picture	132	5.8%	15.8%
	Using calendar and notes	44	1.9%	5.3%
	Editing documents	18	0.8%	2.1%
	Web surfing	302	13.3%	36.0%
	Others	7	0.3%	0.8%
Total		2271	100.0%	271.0%

a. Dichotomy group tabulated at value 1.

Q6. Have you installed apps (software application) on your smartphone?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	784	93.6	93.6	93.6
	No	54	6.4	6.4	100.0
	Total	838	100.0	100.0	

$Q7 What are your most-commonly –used apps?

	Responses		Percent of Cases
	N	Percent	
Whatsapp	500	31.8%	65.4%
Line	54	3.4%	7.1%
Google map	72	4.6%	9.4%
Taxi-calling apps	4	0.3%	0.5%
Weather (e.g. Observatory)	55	3.5%	7.2%
Openrice	19	1.2%	2.5%
Games	166	10.5%	21.7%
Calories Calculator	2	0.1%	0.3%
Dictionary	30	1.9%	3.9%
MSN / QQ	20	1.3%	2.6%
Newspapers / Magazines	98	6.2%	12.8%
TV apps (e.g. MyTV, Cable TV, Now, ppstream)	58	3.7%	7.6%
Youtube	37	2.4%	4.8%
Facebook	246	15.6%	32.2%
Investment (e.g. Stock, Real Estate)	39	2.5%	5.1%
Photo editing	67	4.3%	8.8%
Document editing	22	1.4%	2.9%
Transport information (e.g. KMB, MTR)	29	1.8%	3.8%
Others	56	3.6%	7.3%
Total	1574	100.0%	206.0%

a. Dichotomy group tabulated at value 1.

Q8. Do you know how many apps you have downloaded?

	Frequency	Percent	Valid Percent	Cumulative Percent
I know	441	52.6	56.3	56.3
I don't know	343	40.9	43.8	100.0
Total	784	93.6	100.0	
Missing	54	6.4		
Total	838	100.0		

Q9. Will you check the downloaded apps periodically and delete the unused ones?

		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	605	72.2	77.2	77.2
	No	179	21.4	22.8	100.0
	Total	784	93.6	100.0	
Missing		54	6.4		
Total		838	100.0		

Q10. Do you know the apps you downloaded have access right to the information on your smartphone?

		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	302	36.0	38.5	38.5
	No	422	50.4	53.8	92.3
	I know what some of the apps have access to but I don't know all of them	60	7.2	7.7	100.0
	Total	784	93.6	100.0	
Missing		54	6.4		
Total		838	100.0		

Q10a. Before you decide to download an app, will you read the terms and conditions clearly or ensure that you understand the app's access right to the information on your phone?

		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	225	26.8	28.7	28.7
	No	486	58.0	62.0	90.7
	I do for some of the apps but not for all of them	73	8.7	9.3	100.0
	Total	784	93.6	100.0	
Missing		54	6.4		
Total		838	100.0		

$Q11 What will you consider when you download an app?

	Responses		Percent of Cases
	N	Percent	
Popularity	363	11.2%	46.4%
User's reviews	319	9.9%	40.7%
Functions	505	15.6%	64.5%
Degree of needs	519	16.0%	66.3%
Convenient to use or not	389	12.0%	49.7%
Download of the app is quick or not	154	4.8%	19.7%
Free or Paid / Price	556	17.2%	71.0%
Privacy policy	225	7.0%	28.7%
Terms and conditions	189	5.8%	24.1%
Others	18	0.6%	2.3%
Total	3237	100.0%	413.4%

a. Dichotomy group tabulated at value 1.

$Q12 What kind of personal information has been stored in your smartphone?

		Responses		Percent of Cases
		N	Percent	
	Friends' contact information (e.g. phone number, email)	720	33.6%	85.9%
	Your bank or credit card account password	58	2.7%	6.9%
	Entrance code of buildings	30	1.4%	3.6%
	ATM password	16	0.7%	1.9%
	Your online account number	245	11.4%	29.2%
	Your online account password	174	8.1%	20.8%
	Your email address	533	24.9%	63.6%
	Your email account password	256	11.9%	30.5%
	Personal and sensitive photo	54	2.5%	6.4%
	Others	23	1.1%	2.7%
	Haven't stored any personal information	35	1.6%	4.2%
Total		2144	100.0%	255.8%

a. Dichotomy group tabulated at value 1.

Q12a. Will you encrypt personal information on your smartphone?

		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	111	13.2	13.8	13.8
	No	692	82.6	86.2	100.0
	Total	803	95.8	100.0	
Missing		35	4.2		
Total		838	100.0		

Q13. Are you worried about data leakage when using your smartphone or when downloading apps?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	417	49.8	49.8	49.8
No	421	50.2	50.2	100.0
Total	838	100.0	100.0	

Q14. Would you take any steps to protect the confidentiality of the information on your smartphone?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	443	52.9	52.9	52.9
No	395	47.1	47.1	100.0
Total	838	100.0	100.0	

$Q14a What is the protective action taken?

	Responses		Percent of Cases
	N	Percent	
Set up auto screen lock	333	40.1%	76.4%
Set up screen lock	239	28.8%	54.8%
Install anti-virus program	146	17.6%	33.5%
Install anti-theft program	87	10.5%	20.0%
Others	26	3.1%	6.0%
Total	831	100.0%	190.6%

a. Dichotomy group tabulated at value 1.

Q15. Do you know that your contact lists may be uploaded to the central servers when you are using social networking apps?

	Frequency	Percent	Valid Percent	Cumulative Percent
I know	407	48.6	48.6	48.6
I don't know	431	51.4	51.4	100.0
Total	838	100.0	100.0	

Q16. Do you know that some apps will do actions that they have not said they would (e.g. upload your smartphone information without notification)?

	Frequency	Percent	Valid Percent	Cumulative Percent
I know	249	29.7	29.7	29.7
I don't know	589	70.3	70.3	100.0
Total	838	100.0	100.0	

Q17. Do you know that the geo-location may also be recorded in the photo when you take a picture with your smartphone?

	Frequency	Percent	Valid Percent	Cumulative Percent
I know	516	61.6	61.6	61.6
I don't know	322	38.4	38.4	100.0
Total	838	100.0	100.0	

Q18. Have you written down your IMEI code?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	80	9.5	9.5	9.5
No	534	63.7	63.7	73.3
Don't know what IMEI is	224	26.7	26.7	100.0
Total	838	100.0	100.0	

Q19. Have you done any modification on your smartphone like jailbreaking or rooting?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	73	8.7	8.7	8.7
No	721	86.0	86.0	94.7
Don't know	44	5.3	5.3	100.0
Total	838	100.0	100.0	

Q20. Have you ever downloaded any program from unofficial market (e.g. black market)?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	120	14.3	14.3	14.3
No	718	85.7	85.7	100.0
Total	838	100.0	100.0	

$Q21 What will you consider when you purchase a smartphone?

	Responses		Percent of Cases
	N	Percent	
Function	710	21.0%	85.0%
Price	649	19.2%	77.7%
Repair/ Warranty service	379	11.2%	45.4%
Brand popularity	471	14.0%	56.4%
Model release date	396	11.7%	47.4%
Outlook	545	16.2%	65.3%
Risk of data leakage	192	5.7%	23.0%
Others	32	0.9%	3.8%
Total	3374	100.0%	404.1%

a. Dichotomy group tabulated at value 1.

D1. Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	399	47.6	47.6	47.6
Female	439	52.4	52.4	100.0
Total	838	100.0	100.0	

D2. Age

		Frequency	Percent	Valid Percent	Cumulative Percent
	Aged 15-20	185	22.1	22.3	22.3
	Aged 21-30	175	20.9	21.1	43.4
	Aged 31-40	177	21.1	21.4	64.8
	Aged 41-50	193	23.0	23.3	88.1
	Aged 51-60	81	9.7	9.8	97.8
	Aged 61 or above	18	2.1	2.2	100.0
	Total	829	98.9	100.0	
	Refused to answer	9	1.1		
Total		838	100.0		

D3. Education

		Frequency	Percent	Valid Percent	Cumulative Percent
	Primary or below	11	1.3	1.3	1.3
	Secondary	371	44.3	44.5	45.8
	Upper secondary / Sixth form	70	8.4	8.4	54.2
	Tertiary (non-degree level)	62	7.4	7.4	61.6
	Tertiary (degree level) or above	320	38.2	38.4	100.0
	Total	834	99.5	100.0	
	Refused to answer	4	.5		
Total		838	100.0		

D4. Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
	Managers and administrators	89	10.6	11.0	11.0
	Associate professionals	52	6.2	6.4	17.4
	Service workers and shop sales workers	68	8.1	8.4	25.7
	Professionals	80	9.5	9.9	35.6
	Clerks	139	16.6	17.1	52.7
	Skilled agriculture and fisheries workers	1	.1	.1	52.8
	Craft and related workers	14	1.7	1.7	54.6
	Plant and machine operators and assemblers	22	2.6	2.7	57.3
	Non-skilled workers	17	2.0	2.1	59.4
	Housewives	59	7.0	7.3	66.6
	Students	224	26.7	27.6	94.2
	Unemployed	19	2.3	2.3	96.6
	Retired	21	2.5	2.6	99.1
	Others	7	.8	.9	100.0
	Total	812	96.9	100.0	
	Refused to answer	26	3.1		
Total		838	100.0		

D5. Personal monthly income (Including double pay, bonus, etc)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Below HK$5,000	6	.7	1.3	1.3
	HK$5,000 - 9,999	40	4.8	9.0	10.3
	HK$10,000 - 14,999	112	13.4	25.2	35.5
	HK$15,000 - 19,999	79	9.4	17.8	53.3
	HK$20,000 - 29,999	89	10.6	20.0	73.3
	HK$30,000 - 39,999	48	5.7	10.8	84.0
	HK$40,000 - 49,999	28	3.3	6.3	90.3
	HK$50,000 - 59,999	21	2.5	4.7	95.1
	HK$60,000 - 69,999	6	.7	1.3	96.4
	HK$70,000 - 79,999	2	.2	.4	96.9
	HK$80,000 or above	14	1.7	3.1	100.0
	Total	445	53.1	100.0	
	Missing	323	38.5		
	Refused to answer	70	8.4		
	Total	393	46.9		
Total		838	100.0		