

RESEARCH STUDY

Mobile Phones and Internet in Cambodia 2015



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Executive Summary

This study examines Cambodian phone users' knowledge, attitudes and practices in relation to Khmer-language typing, writing and search habits, and identifies the factors motivating them to use (or not use) Khmer script. It also attempts to identify changes and trends in the way Khmer-enabled phones are being used, including their role as a means of accessing the Internet—in particular Facebook.

The study's findings respond to a need to document phones' effectiveness as a tool for government and civil society organizations to communicate directly with citizens and beneficiaries all over Cambodia, offering them information and services in written Khmer. The results enable quantification of the percentage of Cambodian phone owners who are able to send and receive SMS messages in Khmer, and to access the Internet and use Facebook in Khmer.

Data collected in September 2015 shows that Cambodia's phone market is already saturated, with over 94% of Cambodians claiming to own their own phone, and more than 99% being reachable through some sort of phone. The proportion of citizens using more than one phone was only 13.1%, while one Cambodian in four uses more than one operator. These numbers are similar to those reported in previous years.

The results show that 63.3% of Cambodians own phones with Khmer script capability. The use of such phones is more common among men (67.6%) than women (49%) and more common in urban areas (67%) than rural (61.7%).

Some 39.5% of users were found to have at least one smartphone. The ability of phones to display Khmer is more common in smartphones (78%) than in dumb phones (56.3%). The capability of smartphones users' ability to display Khmer improved with education level of their owner.

It was found that almost a third of Cambodians have access to the Internet and Facebook, and that most of the people in this group have their own Facebook accounts. Smartphones are by far the most common means of accessing Facebook; only 3% of users access the social media site solely through computers, while 80% access it exclusively through phones.

Internet/Facebook use has risen to become in 2015 the second most important channel for Cambodians to access information—trailing only TV (30% vs 24%)—having surpassed radio (20%) and continuing to gain market share yearly.

To increase the rate of adoption, the development of better text-prediction and input methods for Khmer script in phones is recommended.

Abbreviations & Acronyms

ICT	Information and Communications Technology
KTV	Karaoke Television
PPS	Probability Proportional to Size
SMS	Short Message Service
SPSS	Statistical Package for the Social Sciences
USAID	United States Agency for International Development

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Mobile Phones and Internet in Cambodia 2015¹

1 Introduction

1.1 Background of the Study

The achievement of Khmer-language standardization in computers about seven years ago² opened the door to the use of Khmer in phones. While the first phones supporting Khmer script appeared in 2006, use of Khmer did not catch on immediately, as only mid-range models supported it. These were relatively unpopular, given that purchase decisions in Cambodia tend to be based either on price (favoring inexpensive models) or social status (favoring expensive models).

Most manufacturers of basic phones have since developed devices that support Khmer. Most phone models currently sold in Cambodia are able to send and receive messages in Khmer.

Smartphone users started a small revolution of their own, as the devices' arrival coincided with the Internet's emergence as a popular³ medium. For many users, it is their only channel for accessing the Internet. Most of these smartphones did not support Khmer natively; some users quickly worked out how to enable them to support Khmer. Native support for Khmer has since become the norm, with support for Android phones developed by Open Institute in 2013 as part of the SPICE⁴ program.

Meanwhile, the Internet—in particular Facebook—has become both a key source of information and a rapid-communication tool for groups of friends and colleagues, quickly surpassing other sources of information in terms of popularity among Cambodian youth.

1.2 Research Problems/Significance

Measuring the penetration rates of these technologies and understanding the purposes for which they are being used have become critical for commercial, government and development organizations hoping to use phones to deliver information and services to Cambodians.

With the way now cleared for the use of Khmer in phones, and most

1 This work was made possible by the generous support of the American people through the
2 The standardization process was greatly accelerated by the Open Institute's KhmerOS program, which has worked since 2004 to standardize the use of Khmer script in society and government by using Unicode. The Open Schools Program, also housed at the Open Institute, supported the Ministry of Education in the standardization to Unicode and the teaching of Unicode to all students in grades 11 and 12. www.open.org.kh – www.khmeros.info.

3 In a typical chicken-and-egg symbiotic situation, smartphones opened up the possibility of Internet access, while this demand for Internet access boosts sales of smartphones.

4 The USAID-funded program **Structuring Partnerships for an Innovative Communication Environment** (SPICE), implemented by the Open Institute, helps improve communication between civil society organizations and their beneficiaries through the use of mobile technology.

smartphones and dumb phones⁵ on the market now permitting the use of Khmer, it is important to quantify the penetration rate of Khmer-enabled phones, and to understand whether they have reached the point of critical mass at which users start writing to each other in Khmer.

The percentage of phone users whose phones support Khmer was measured by the Open Institute in 2013 (29.5%) and in 2014 (51.3%), but rapid changes in technology and increases in demand make such numbers very short-lived; information that is two years old is outdated and irrelevant, making it necessary to again quantify the percentage of phones that support Khmer script.

Understanding the extent of Internet/Facebook use via phones has become even more important, given this medium's capabilities in terms of sending more detailed information and providing services that cannot be delivered through a simple phone call or an SMS.

1.3 Research Purposes and Objectives

This third annual study provides information on the state of Khmer-enabled phone, smartphone and Internet/Facebook use in Cambodia during the period from September 2014 to September 2015. It compares this information to data obtained in the previous two years, enabling analysis of the growth in usage of these devices and services.

2 Means and Methods

2.1 Population of the Study

This work studies Cambodian citizens between the ages of 15 and 65 living inside the country.

A projection of the 2008 population census to 2013, corrected to include the expected natural decrease, yields an estimated present population of the group being studied of 9,606,450. This number is consistent with an approximation of the population offered by the Cambodian Inter-Censal Population Survey 2013.

For the purposes of this study, the rural population of Cambodia was estimated to represent 70% of the total, with the urban population at 30%. According to the National Institute of Statistics, in 2008 the urban population accounted for 19.5% of the total, and the rural population 80.5%. However, given the recent rapid growth of the urban population (mostly due to the urban-based garment industry and growth in the hospitality industry) we believe these figures no longer reflect reality. In particular, we analyzed the composition of the garment industry workforce, and found that most workers were of rural origin and counted in their rural homes, while living and working in urban areas; they were

⁵ For the purposes of this study, only two types of phones are considered. Phones capable of accessing the Internet (through the browser) and Facebook, and which have real keyboards, are considered smartphones. The rest are labeled as dumb phones. Feature phones are not so popular in Cambodia, and hard to classify. They are considered smartphones if they perform the function of providing access to the Internet or to Facebook and have real keyboards; otherwise they are considered dumb phones.

included in our sample as part of the urban population (half of 1,200,000 workers). These migrant factory workers represented 6% of the population. The remaining 4% included in the shift to the urban category comprised mostly students, white-collar workers, hospitality workers and entertainment workers. This last assumption regarding students, hospitality workers and entertainment workers is only partially justified by hard data on these groups, but we strongly believe it reflects reality, yielding a proportion of 30% of the population residing in urban areas, a figure much more in line with the actual situation in Cambodia in 2015.

Based on information from the National Institute of Statistics⁶, the population was taken to comprise 48.6% men and 51.4% women. For the sake of compatibility with previous studies and to simplify results, however, calculations used in this report assume a male-female ratio of 50:50. The discrepancies created by this adjustment have been determined to be statistically irrelevant for the purposes of this study.

2.2 Sample Size and Composition

The sample for this study comprised 2,064 participants, sufficient to provide answers to the main questions of the study with a confidence interval of 2.16 (with a 95% confidence level).

The population was divided into two groups for data-collection purposes: (a) people who were at home at the time data-collection took place (office hours); and (b) people who were hard to find at home at that time, but who could be found either at their work place or at the location where they have lunch.

Data from 84.3% of the sample was collected at households across the country. Respondents were recruited based on the official national census data of the population. Gender, age and location of residence of the respondents were proportionally selected in accordance with census data and with the population of each one of five randomized provinces (Kampong Cham and Tboung Khmom are treated as one province in this study, to maintain coherence with previous studies). In the case of Phnom Penh, due to the high levels of access to mobile phones in the city, the recruitment proportion was changed to fit the actual proportion of rural/urban residents (estimated at 70% urban and 30% rural).

The remaining 15.7% was made up of both white-collar workers (government officials, NGO staff and private company staff) in Phnom Penh and blue-collar workers (garment, restaurant and entertainment workers).

2.3 Sampling

2.3.1 First Type of Respondent

Multi-stage sampling using Probability Proportional to Size (PPS) was used to select a nationally representative sample of Cambodians aged 15-65 in households.

⁶ Nis.gov.kh

Cambodia's 25 provinces were categorized into five regions: plain; Tonle Sap; coastal; plateau and mountain; and capital city. Kampong Cham was selected in the plain region, Battambang in the Tonle Sap region (which also included data from floating villages, represented by Kampong Luong, Pursat); Preah Sihanouk was selected in the coastal region, and Stung Treng was selected in the plateau and mountain region. These provinces have the standard characteristics matching the requirements of the study.

A total of 69 villages (28 urban) were selected across the five regions of Cambodia. Within each region the number of urban and rural villages was balanced to match the urban-rural proportion of the province. Villages were randomly selected. From each village, 25 respondents were selected.

Systematic sampling was used to recruit households. In each village, the data-collection team leader visited the village chief to ask for the actual number of households in the village. This figure was used to calculate the interval of households that data collectors should use to identify the homes they would conduct interviews in. At the village level, purposive sampling was applied in the data-collection process to choose respondents. Interviewers visited the households, interviewed the persons they met, screening out respondents that did not meet the gender/age requirements.

2.3.2 Second Type of Respondent

To collect data from respondents who were not found at home, the interviewers were required to stand outside garment factories and wait for workers. At restaurants, owners were informed about the study and their permission was sought to interview employees and customers. Workers at massage shops, beer gardens and Karaoke parlors were interviewed after the approval of the manager was obtained. Workers and customers of restaurants were randomly selected, as were workers from massage shops, beer gardens and Karaoke parlors.

2.4 Questionnaire and Observation Data Sheet

The survey form was designed to include the following:

- ▲ Demographic information
- ▲ Phone characteristics (as described by the user, but also observed)
- ▲ Knowledge, attitude and practices of phone users

The questionnaire was used successfully in 2013 for the baseline study and in 2014 for the first end-line study. It was improved as a result of the first- and second-year analyses and with the help of new ideas accumulated during those years, including an expansion of the section related to Internet/Facebook use. The approach to data collection using tablets was used successfully in 2014 and improved upon this year.

2.5 Data Collection

Data was collected using interviews and observation: face-to-face verbal interviews based on a standardized form. Interviewers read each question to the respondent and recorded the answer. Data was also collected through direct observation of the phones of the respondents, before and after sending an SMS in Khmer to them.

Data was collected using tablets and an electronic questionnaire (implemented using the Open Data Kit).

Each data-collection team conducting fieldwork consisted of one supervisor and five data collectors. In total, there were four supervisors and 20 data collectors, all of whom were recruited and trained by researchers at Open Institute.

Data collection was then conducted over a period of two weeks in September 2015. Supervisors were responsible for field supervision and quality throughout the conduct of the fieldwork.

2.6 Data Management and Analysis

The forms were checked by the supervisors before being synchronized to the Open Institute's server. The consistency checks and constraints imposed by the form itself on the tablet, together with having the forms checked by supervisors before synchronization, guaranteed the accuracy and validity of the data. All completed forms were stored on Open Institute's server. Only people responsible for data analysis had access to the data.

The OpenOffice 4 spreadsheet and IBM SPSS Statistic version 20 were used to analyze the data. Descriptive analysis was used to count frequencies of the key variables.

Comparison with the baseline survey data collected in 2013 and 2014 provided important information on the trends and changes of the past two years.

2.7 Research Ethics

All interviewers and fieldwork team members were trained in ethical data collection behavior, including confidentiality and anonymity. All selected respondents were informed about the study and asked for their consent to participate in it. Respondents were able to skip questions or withdraw from the study at any time.

No identifying information of the respondents was used in the analysis. All completed forms were stored on Open Institute's server. Only those people responsible for data analysis had access to the data.

3 Results

3.1 Demographics of the Sample

Of the 2,064 participants between the ages of 15 and 65 interviewed for the study, 44% resided in urban areas and 56% in locations considered rural. Female respondents accounted for 56.7%, with 43.3% male. Over one-third of the respondents (34.5%) were single, while 60.5% were married. Participants were chosen from three age groups: 15-24 (34.8%), 25-39 (34.2%) and 40-65 (31%). The average age of the respondents was 33 years.

A majority of the participants had some degree of education at the primary, lower secondary and upper secondary levels (32.8%, 33.6% and 18.5%). Some 6.2% of respondents had completed a university degree and a few had finished a master's degree. Only 8.2% had received no formal schooling at all.

Studies conducted in Cambodia usually consider the population to be 50% female. Because 56.7% of the participants in our sample are female, however, a correction was made in all applicable calculations to ensure that the results faithfully reflected the gender breakdown.

The differences between the actual sample and the intended sample are due to the impossibility of finding sufficient men and young people in several of the villages randomly selected; many people in these categories had moved to urban areas or to other countries to find work.

Regarding the urban and rural populations, the study takes into account the fact that the number of rural and urban participants surveyed does not correspond to the proportions as they exist in Cambodia. The 44%-56% urban-rural sample has been weighted to reflect the reality of a 70%-30% rural-urban population split.

3.2 Owning a Phone

Out of the 2,064 respondents interviewed in this survey, **94.5% said they owned their own phone(s)** (a 0.8% increase from 2014 and up 4.5% from 2013) and showed it (or them) to the interviewer (95.9% ownership in urban areas versus 93.5% ownership in rural areas). Some 92.6% of women were found to own a phone, versus 97.2% of men.

Of the 5.5% who did not have a phone, almost three in four could be contacted through a household phone. Only seven respondents out of the 2,064 were not able to offer a phone number they could be contacted through (0.3%).

3.3 Number of Phones and Operators Used

Respondents were asked how many phones they used. The majority of respondents (81.4%) used only one cellphone, some used two (12.2%) and only a few (0.9%) used three phones. The remaining 5.5% did not have their own

phone. It was calculated from this data that Cambodians use an average of 1.07 phones per person (up from 0.98 in 2013). Women use an average of 1.01 phones, whereas men use an average of 1.13 phones.

Regarding the number of operators used by the same phone user, it was found that 27% of Cambodians use SIMs from more than one operator (35.4% for urban and 21.5% for rural, 32.9% of males and 23.6% of females). Only 2.4% use SIMs from more than two operators. The average number of operators used by a Cambodian is 1.2 (up from 1.11 in 2013). This yields 1.12 operators used for each phone (= 1.2/1.07), the same ratio as in 2013.

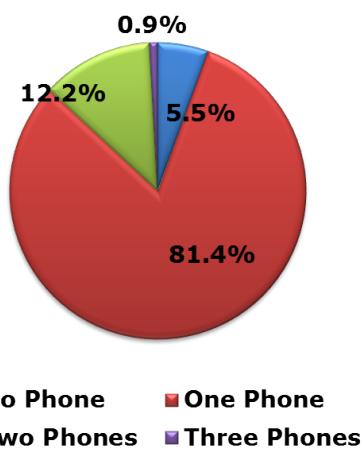
The total number of phones used by Cambodians between the ages of 15 and 65 is estimated at 10,214,830 (a 1.2% increase from 2014 and an 8.2% increase from 2013).

The total number of operator connections (SIMs) used by Cambodians between the ages of 15 and 65 is estimated at 11,511,427 (a 2% decrease from 2014 and an 8% increase from 2013).

3.4 Smartphones

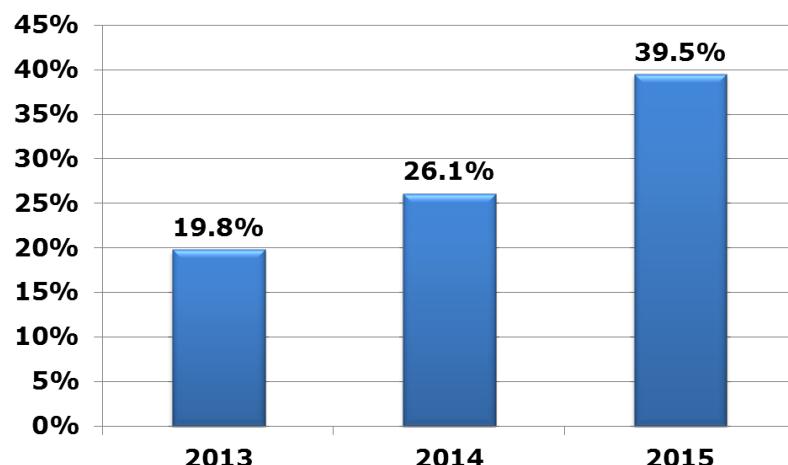
Some 39.9% of the phones encountered were smartphones, indicating a 41% increase from 2014 and up 81.5% from 2013. **The percentage of Cambodians who own at least one smartphone is 39.5%,** a 51.7% increase from 2014 and almost a 100% increase from 2013. Some 51.7% of urban residents had at least one smartphone, whereas for rural residents it was only 34.3% (32.3% of females and 46.8% of males). Ownership of smartphones was also found to gradually increase with level of education, from 15.2% of those who have had no formal education to 82% among those studying at university or who already have a university degree.

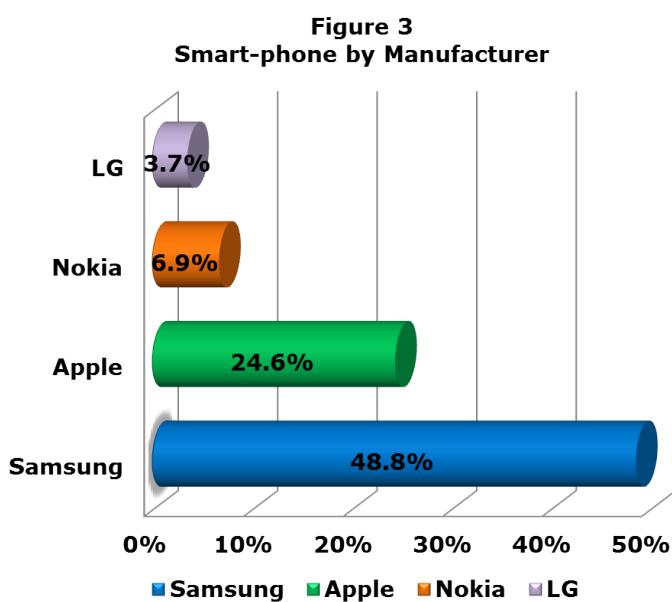
Figure 1
Number of Phones Used



■ No Phone ■ One Phone
■ Two Phones ■ Three Phones

Figure 2
Smart-phone Penetration in Cambodia from 2013 to 2015





Regarding the **brand of smartphone** used, Samsung accounted for 48.8% of the market (down from 49.5% in 2014 but up from 37.5% in 2013), followed by Apple with 24.6% (up from 19.6% in 2014 and 21.9% in 2013). Nokia claimed 6.9% (down from 11.9% in 2014 and 18.5% in 2013), LG 3.7% (down from 4.7% in 2014 and 3.8% in 2013). Other manufacturers (including Huawei, HTC, Sony Ericsson and Singtech) amounted to 16% (up from 8.5% in 2014 and 10.6% in 2013).

Among Samsung smartphones, the Galaxy Note model accounted for 24.7%, followed by Galaxy S2 (11.4%), Galaxy Note 2 (9.6%), Galaxy Grand (6.4%), Galaxy S (6.2%), Galaxy S3 (3.7%), Galaxy Grand2 (3%), Galaxy S4 (2.5%), Galaxy Note 3 (2.3%) and other Galaxy models (30.9%).

Among Apple smartphones, the iPhone 5 model accounted for 31.4%, followed by iPhone 4 (19.6%), iPhone 6 (15%), iPhone 5S (13.6%), iPhone 4S (10.5%), iPhone 6 Plus (7.7%) and other models (2.3%).

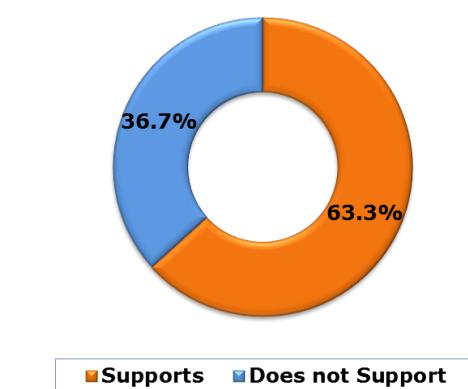
The Asha series accounted for more than half of Nokia smartphones (54.1%), trailed by the Lumia series (26.2%) and X series (9.8%). The least cited were the C series (6.6%) and other models (3.3%).

Among LG smartphones, the Optimus series accounted for 53.1% and the remainder comprised a large variety of models (46.9%).

3.5 Khmer Language in Phones

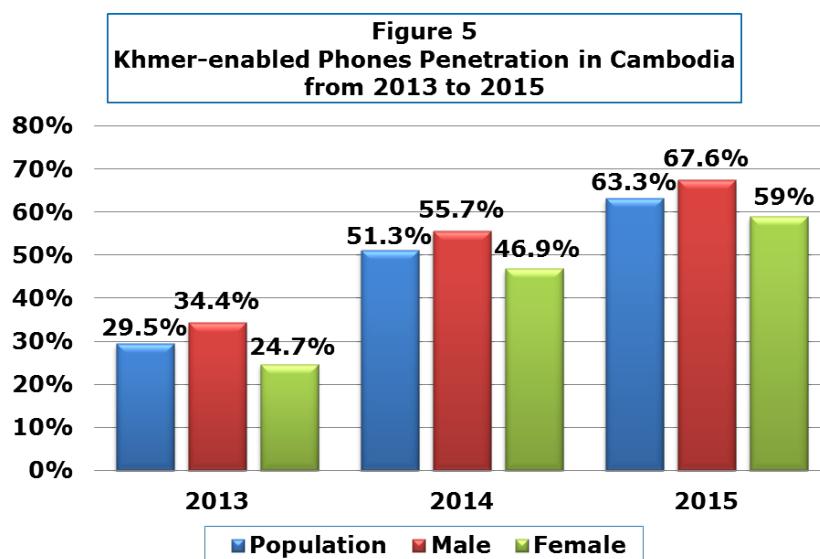
The study found that, after equilibrating for location and gender, **63.3% of Cambodians between the ages of 15 and 65 had at least one phone through which it was possible to send and receive messages in Khmer script (a 23.4% increase from 2014 and an 114% increase from 2013)**. It was found that 59% of women had such a

Figure 4
Cambodians who have a phone that support Khmer

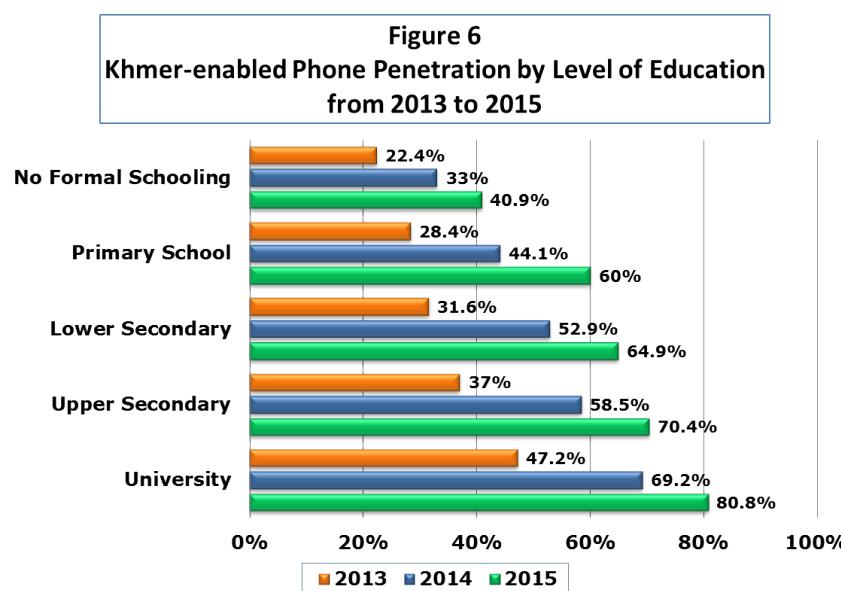


phone, versus 67.6% of men. The number of women using Khmer-enabled phones grew by 139% compared to the 2013 study, while for men the growth rate was only 97%, indicating a reduction in the gender gap in smartphone usage. The study found that the Nokia 1280 (an older, inexpensive model that does not support Khmer) accounted for 15.1% of the total phones used. This phone, no longer sold, represented about one third of all phones in 2013.

Support for Khmer was found to be more extensive in urban areas than in rural areas (67% versus 61.7%). The increase in support in urban areas since 2014 was 16.7% (26.9% in rural areas) and since 2013 was 83% (133% for rural areas).



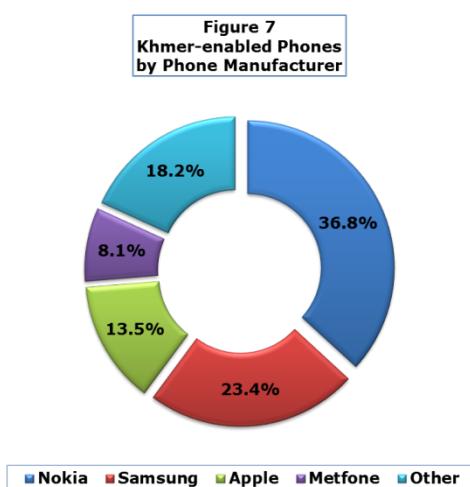
The percentage of Khmer-enabled phones owned by Cambodians was also found to gradually increase with the level of education of their owners, from 40.9% of those with no formal education to 80.8% for those studying at university or who already have a university degree (83.3% of women versus 78.2% of men).|



Some 78% of the smartphones were found to support Khmer script; these numbers represent an increase of 23% over the 2014 level and 87% compared to 2013. For non-smartphones, the percentage was 56.3%; an increase of 18% since 2014 and of 83% since 2013.

3.5.1 Manufacturers of Phones that Support Khmer

Nokia phones account for 45% of all phones in Cambodia. The only three other significant brands are Samsung (21.5%), Apple (9.8%) and Metfone (5.6%).



Nokia models account for 36.8% of all phones that support Khmer. The brand is followed by Samsung (23.4%), Apple (13.5%) and Metfone (8.1%). The remaining 18% was distributed among a large number of manufacturers.

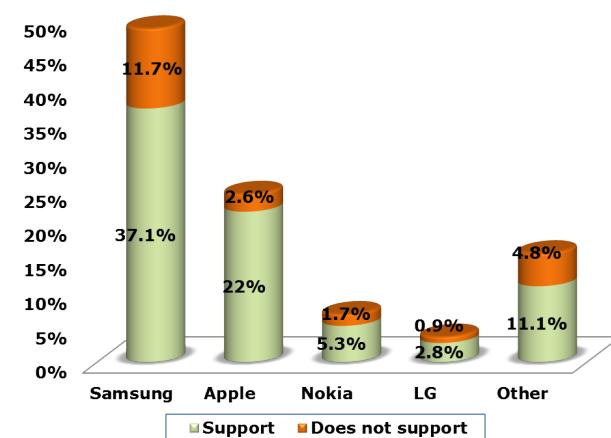
Among Nokia phones, just a handful of models offer most of the support for Khmer script. The Nokia 105 model accounted for 20.9% of them, followed by Nokia 107 (11.9%), Nokia 101 (10.8%) and Nokia 108 (8.3%). The X series totaled 5%. They were trailed by the Nokia 220 at 3.9%. The Asha series was the only other of any significance, accounting for 3%.

Of the 89.5% of Apple smartphones that supported Khmer, the iPhone 5 accounted for 31% of them, iPhone 4 for 19.3%, iPhone 6 for 15.7%, iPhone 5S for 14.2% and iPhone 6 Plus for 9.1%.

Some 77.4% of Nokia smartphones supported Khmer, almost half of them being versions of the Asha phone (48.9%). The Lumia series accounted for 31.9% and other series for 19.1%.

For Samsung, upwards of seven out of 10 smartphones supported Khmer (74.6%). Galaxy Note accounted for 25.2%, followed by Galaxy Note 2 (11.3%), Galaxy S2 (9.5%), Galaxy Grand (5.5%), Galaxy Grand2 (3.7%), Galaxy S3 (3.7%), Galaxy S4 (2.8%) and other Galaxy series (30.4%).

Figure 8
Distribution of Smart Phone by Brand and Their Support for Khmer Script



3.5.2 The Beliefs of Respondents—and the Truth After Observation

For each of the phones they used, respondents were asked if the phone(s) supported Khmer text (Unicode). Following their response, the interviewer sent an SMS in Khmer to each of the respondent's phones, then checked to see if the message was correctly displayed in the respondent's phone(s).

As a result of these questions it was found that 51.8% of users thought that their main phone supported Khmer; 27.1% thought it did not, and 14.1% admitted not knowing.

Observation of phones (after sending an SMS in Khmer) showed that the user's perception was not always correct.

The discrepancies between the perception of the users and the actual ability of the phones to display Khmer went in both directions: some users thought their phone could support Khmer when the phone could not, while others thought that theirs did not when they were in fact able to display Khmer. In particular:

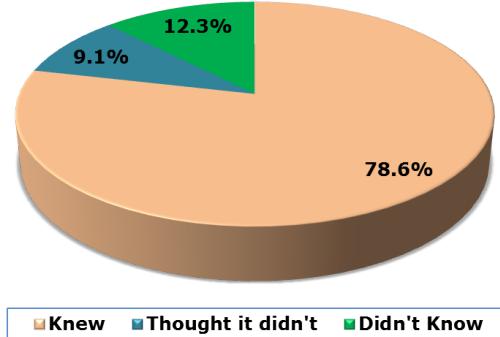
- 4.8% (down 54.6% from 2014 and 70.6% from 2013) of those who thought their main phone could receive Khmer Unicode messages were wrong: Their phones could not receive such messages.
- 19.9% (down 4.7% from 2014 and up 37.2% from 2013) of those who thought their phone did not support Khmer were wrong: Their phones did show a capability to support it. The phones of 55.7% of those who did not know whether their main phone supported Khmer actually supported it.

Of those whose main phone supported Khmer, 78.6% knew it for sure (this level of awareness was up by 13.1% from 2014 and by 35.6% from 2013); 9.1% thought it did not, and 12.3% didn't know. Looked at by location, the proportion of participants who knew their phone supported Khmer was 80.4% in urban areas and 77.2% in rural areas. In 2014, the levels were similar in both categories (69%) but in 2013 it was stronger in urban areas (61% vs 54.8% rural); there is no longer a significant gap between the levels of awareness in urban and rural areas.

In gender terms, men were aware that their main phone supported Khmer slightly more often than women (82.1% versus 75.6%). This represents even growth for men and women from 2014 (13%) and a 37.8% increase for men and a 33.1% increase for women from 2013.

Among smartphone users, there was a large difference in awareness levels depending on the brand. Nokia smartphone users showed the lowest awareness;

Figure 9
Phone Supports Khmer
Did users know?

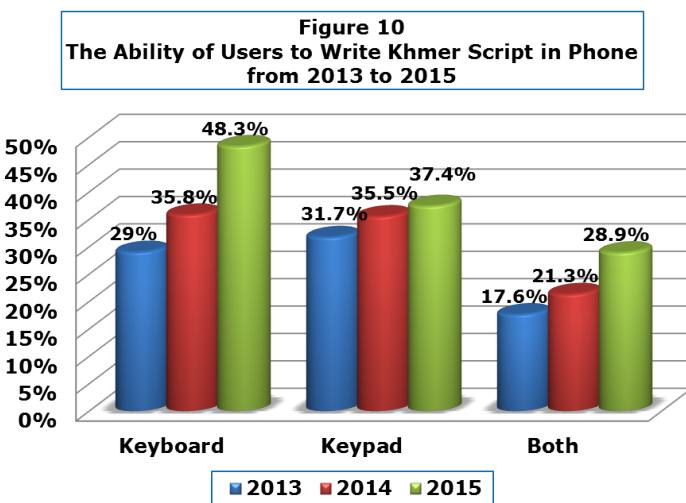


only 75% were aware that their phones were able to support Khmer (a 30.2% increase from 2013). For Samsung smartphones the number rose to 90.4% (10.6% increase from 2013) and for Apple it climbed to 92.1% (5.4% increase from 2013). From 2013 to 2014 all these percentages were very similar; all the growth has been from 2014 to 2015.

3.5.3 Ability to Write in Khmer Script Using Phones

In this section the term *user* refers to phone owners between the ages of 15 and 65 who have at least one phone that can send and receive SMS in Khmer.

Some 37.9% of these users claimed to know how to use the keypad of a dumb phone to type Khmer script (a 7% increase from 2014 and 20% from 2013). 48.3% declared that they knew how to use a smartphone keyboard (a 35% increase from 2014 and a 66.7% increase from 2013). Some 28.9% reported knowing how to type on both kinds of keyboards (35.7% increase from 2014 and 64.3% from 2013).¹

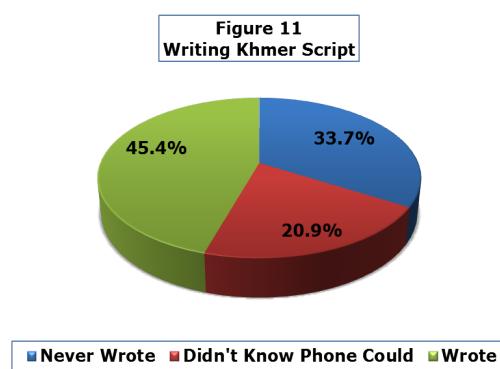


Of the users who had at least one smartphone that could operate in Khmer, 74.5% said they knew how to type in Khmer Unicode (10% increase from 2014 and 34% from 2013). Among this group, those who had finished high school stood out, as 89.7% of them knew how to type in Khmer. If only those who had finished school and lived in urban areas are considered, the percentage rises to 92.4%.

3.5.4 Writing in Khmer Script

As reported above, 78.6% of those with phones that support Khmer knew that their phones had such capability.

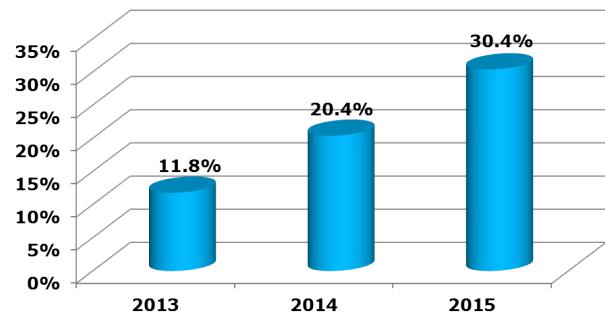
Looking at the problem from the opposite angle, we see that 20.9% of those who had phones supporting Khmer did not know this, and 33.7% said they had never used their phones to write in Khmer Unicode. Only 45.4% had written in Khmer at some point or another.



Some 30.4% of users—equivalent to 27.3% of the whole population—claimed to have written in Khmer script on their phones at some point, a 49% increase from 2014 and a 156% increase from 2013. Men write in Khmer script on their phones slightly more often than women (35.6% for men versus 23.5%). In terms of gender, there was a moderate difference in the pace of growth in writing in Khmer in comparison to 2014 levels: 54.8% growth for men versus 45% growth for women. Compared to 2013, these numbers were 135% for female writers and 175% for male writers.

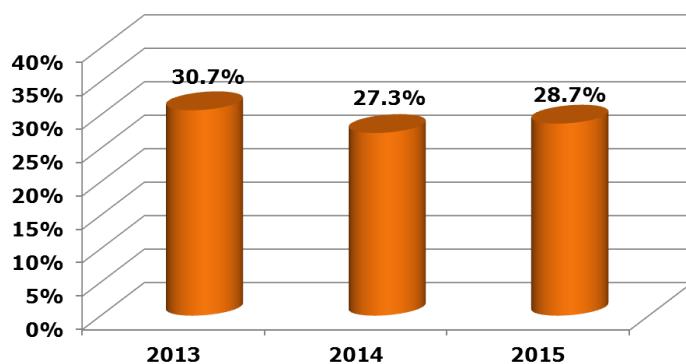
Some 21.9% of users—equivalent to 19.7% of the whole population—claimed to write in Khmer script in their phones daily or weekly. Looking into the age groups among which typing in Khmer script is more frequent (daily or weekly), it was found that 31.7% of those under 25 used it daily or weekly (versus 24.8% in 2014 [27.8% growth in the last year] and 4.8% in 2013 [560% growth over two years]). For those aged between 25 and 35 it was 24.3% (17.4% in 2014 [39.5% growth in one year] and 2.7% in 2013 [800% growth over two years]). For those between 35 and 45 the percentage of users was 13.6% (10.2% in 2014 [33.7% growth in one year] and only 0.5% in 2013 [2,627% growth over two years]).

Figure 12
Khmer Script Writing in Phone of Users
from 2013 to 2015



3.5.5 Writing in Khmer Using Latin Script

Figure 13
Latin Script Writing in Phone of Users
from 2013 to 2015



Some 28.8% of the phone users claimed to have written in Khmer using Latin characters at some point (25.9% of the total population). This represents 5% growth from 2014 and a 6.6% decrease from 2013.

Some 14.2% of users—equivalent to 12.3% of the whole population—claimed to write in Khmer rendered

in Latin script on their phones daily or weekly. Looking at the age groups in which typing Khmer in Latin characters is more frequent, it was found that 28% of those under 25 did so daily or weekly (29.4% in 2014 and 25.6% in 2013). For those between 25 and 35, the percentage was 12.9% (12% in 2014 and

4.6% in 2013), and for those 35 to 45 it grew to 4.26% (1.8% in 2014 and 0.9% in 2013). Only the increase for the 35-45 age group was significant (up by 137% from 2014 and by 374% from 2013).|

3.5.6 Reading in Khmer

33.3% of the users—equivalent to 29.9% of the whole population—claimed to have read Khmer script on their own phones at some point (61.7% increase from 2014 and 171% increase from 2013). Men read Khmer on their phones slightly more often than women (37.7% for men versus 26.7%). The levels at which women and men read Khmer on their phones

showed very similar growth from 2014 (65.3% growth for men versus 61% growth for women); looking at the two-year cumulative growth since 2013, the increase in women readers (164%) is bigger than the increase for men (144%).|

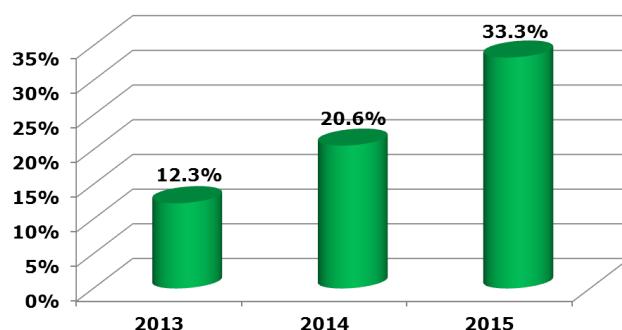
Some 20.9% of users—equivalent to 18.8% of the whole population—claimed to read Khmer script on their phones daily or weekly. Looking into the age groups among which reading Khmer script is more frequent (daily or weekly), it was found that 27.9% of those under 25 read daily or weekly (versus 23.3% in 2014 [19.7% growth in the past year] and 6.4% in 2013 [336% two-year growth]). For those aged between 25 and 35 it was 24.6% (21% in 2014 [17% growth in one year] and 2.9% in 2013 [748% growth over two years]). For those aged between 35 and 45 the percentage was 14.2% (10.1% in 2014 [40.6% growth in one year] and only 0.7% in 2013 [1,928% growth over two years]).

3.5.7 Reasons Given for Not Typing in Khmer Script

The main reasons offered by respondents for never writing in Khmer script, (even if their phones supported Khmer and they knew how to type Khmer Unicode) were, in order of importance:

1. They were not able to read and write Khmer (illiteracy) (20.1%).
2. Writing in Khmer script was difficult and time consuming (18.3%).
3. None of their relatives or friends used Khmer on their phones (15.4%).
4. They were busy with their work (12.1%).

Figure 14
Khmer Script Reading in Phone of Users
from 2013 to 2015



The three most important reasons given in 2014 for not writing in Khmer became the second-, third- and fourth-most important reasons this year. The least important last year (illiteracy) became the most important this year.

It was also found that respondents preferred calling to typing a message in Khmer. This is consistent with the fact that in Cambodia, in many cases it is cheaper to call than to send an SMS.

The factors cited by respondents as being most likely to encourage them to write in Khmer were:

- 1.** Having their friends and relatives do so (33%)
- 2.** Receiving training in typing in Khmer (29.7%)
- 3.** Simpler input methods that would allow them to type in Khmer more quickly (11.8%)
- 4.** Having Khmer characters on their phone's keypad (11.6%)

Factors 1 and 2 have swapped positions since last year. The third and fourth factors are the same as in the 2014 study.

Figure 15
Reasons Given for Not Typing Khmer Script in 2014 and 2015

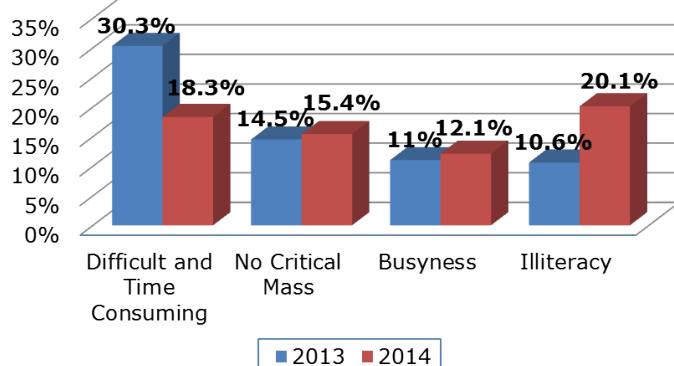
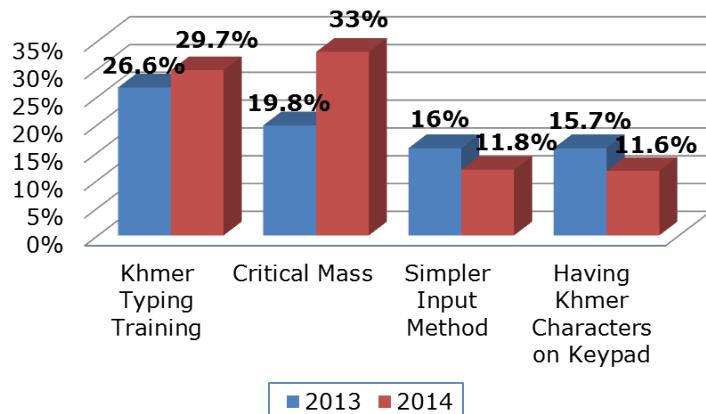
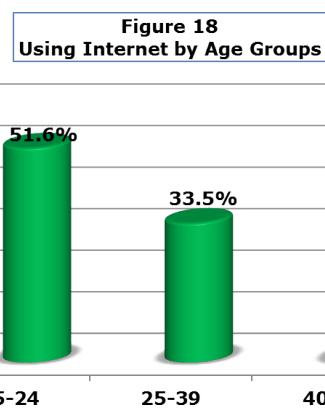
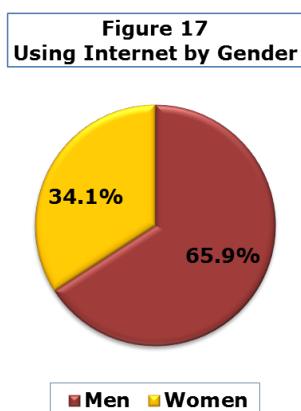


Figure 16
Factors Encouraging Users to Type Khmer Script in 2014 and 2015



3.5.8 Use of Internet on Phones

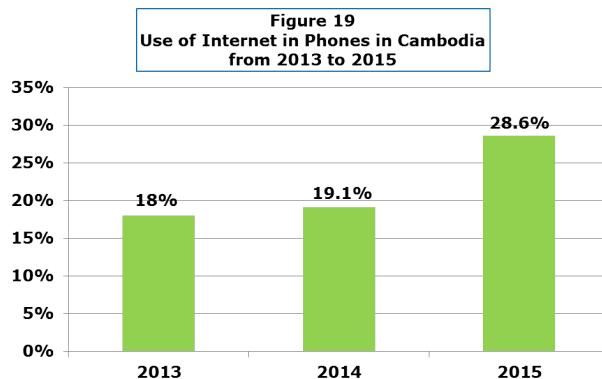
Some 32.5% of Cambodians claimed to use the Internet or to have used it at one time (44.6% urban versus 27.37% rural). Many more men than women claimed to use or to have used the Internet (42.9%/22.2%). Use of the Internet was also found to decrease dramatically with age, from 51.6% of those aged between 15 and 25 to 10% of those aged between 40 and 65.



The three most important reasons for seeking access to the Internet were given as:

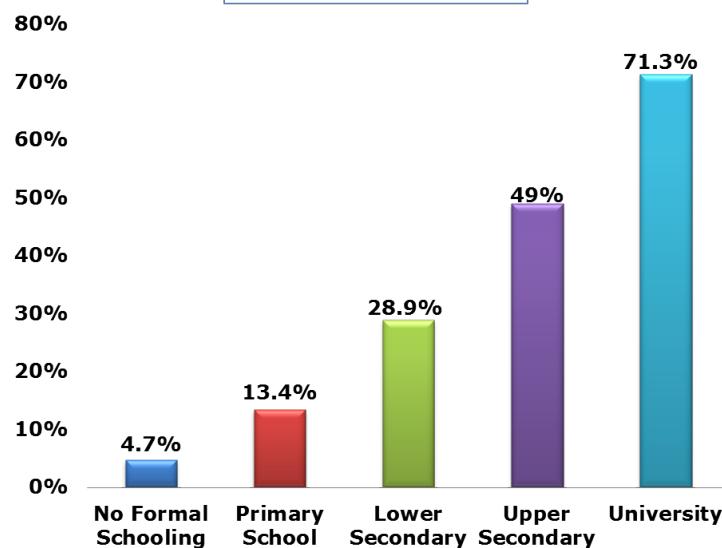
1. For entertainment purposes (music, movies, etc.) (27%)
2. To get news about Cambodia (14.8%)
3. To access information on various topics (health, agriculture, etc.) (10.9%)

28.6% of Cambodians claimed to access the Internet using their own phone (49.8% increase from 2014 and 59% increase from 2013). This percentage was as high as 39.2% for urban users and as low as 24.1% for rural users. The percentage of men who said they used or had used the Internet on their own phones was higher than for women (37.3%/20%). Accessing the Internet via one's own phone was also found to decrease sharply by age group, from 45% of those aged between 15 and 25 to 8.6% of those aged 40 to 65.



In contrast, accessing the Internet from one's own phone was found to dramatically increase with education level, from 4.7% of those with no formal schooling to 71.3% of those who were studying at or who had completed university.

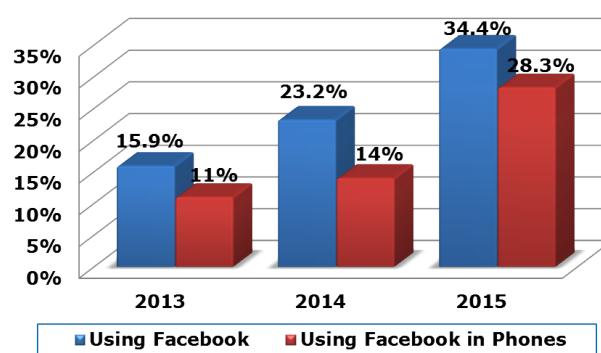
Figure 20
Using Internet in Phone
by Level of Education



- 39.7% of those who access the Internet via their smartphone claim to read Khmer on their phone daily or weekly.
- 43.8% of those who access the Internet from their smartphone claim to write in Khmer script on their phones daily or weekly.

3.5.9 Use of Facebook on Phones

Figure 21
Facebook Usage in Cambodia
from 2013 to 2015

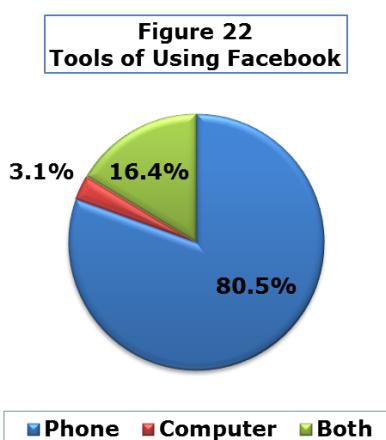


Some 34.4% of Cambodians say they use or have used Facebook (48.2% increase from 2014 and 91% increase from 2013). The percentage was 49.2% for urban residents and 28% for rural residents. Men claimed to use Facebook more than women (43.5% versus 25.2%).

Some 31.8% of Cambodians stated that they have their own Facebook account (a 66.5% increase since 2014).

Men made this claim more often than women (40.7% versus 22.9%). 46.1% of urban residents said they have at least one account, versus 25.7% for rural residents.

The higher number of self-declared Facebook users than Internet users presumably reflects the fact that some respondents use phones belonging to friends or family members to access Facebook.



Of these Facebook account holders, 96.9% said they access Facebook from their phone (80.5% said they access it **solely** from their phone). Only 3.1% accessed the site solely from a computer.

For Facebook account holders, some 95.8% of men used it on their phones, versus 98.7% of women. Among men, 67.5% used Facebook **solely** on their phones, versus 90% for women (72.5% urban versus 82.9% rural).

Some 92.5% of Facebook users had one account, 6.5% had two, and 1% had more than two accounts. The average number of accounts per person was 1.09 (same for urban and rural). The average was 1.07 for men and 1.1 for women.

Asked why they initially joined Facebook, the following factors were cited (in descending order of importance):

1. To stay in touch with friends (39.2%)
2. To obtain information about events in Cambodia (28.9%)
3. To obtain information on a variety of topics (12.6%)
4. For entertainment purposes and to play games (7.8%)

They were then asked to state the reasons that Facebook was valuable to them. In descending order of importance, it was found that phone users access Facebook to:

1. Obtain information about events in Cambodia (31.3%)
2. Stay in touch with friends (29.5%)
3. Obtain information on a variety of topics (15.1%)
4. Stay in touch with family (10.1%)

Asked what activities they engaged in most often when using Facebook, in descending order of frequency, they said:

1. Look at pictures (23.7%)
2. Like or share posts (17.1%)
3. Chat via Facebook message or Facebook messenger (13.9%)
4. Read short articles (13.5%)

Facebook users who had their own account were asked how much they would believe information in Facebook and other social media. It was found that:

Believe information in Facebook and other social media when:	Level of Trust						
	0%	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%	Don't know
It is posted by an individual I trust	2.0%	7.5%	19.5%	46.3%	15.8%	7.4%	1.4%
It is shared by individual I trust	2.2%	8.7%	23.4%	43.3%	15.2%	5.5%	1.7%
It is posted by organization I trust	1.2%	4.2%	15.8%	35.1%	20.3%	21.0%	2.5%
It is shared by organization I trust	2.6%	7.4%	16.8%	39.0%	18.7%	12.5%	3.0%
It includes pictures	0.9%	4.2%	18.0%	37.2%	24.3%	14.2%	1.2%
It includes videos	1.6%	3.9%	15.8%	31.5%	22.5%	23.7%	1.0%
There are many likes/share	1.6%	5.8%	11.9%	38.1%	23.8%	17.7%	1.2%
It is from a Cambodia source	1.2%	4.4%	12.6%	38.9%	23.1%	19.0%	0.9%
It is from an international source	3.6%	7.4%	16.5%	38.2%	19.3%	11.5%	3.5%
It seems true or might true	1.6%	5.2%	15.8%	28.8%	23.3%	24.1%	1.2%

Some 28.3% of Cambodians said they use Facebook on their own phones (up from 14% in 2014 and from 11% in 2013). Some 29.6% of respondents claimed to use Facebook and also had a phone that supported Khmer, but only 25.2% used Facebook on their Khmer-enabled phones. Members of this 25.2% group were divided in four categories: those who claimed to write on Facebook in both Khmer and Latin characters (50%); those who wrote only in Khmer characters (28%); those who wrote only in Latin characters (7.3%); and those who never wrote in Khmer (14.6%).

Additionally, looking at the data from a different perspective, it was found that:

- 70.6% of smartphones are used for accessing Facebook.
- 86.2% of Facebook users who access it via their smartphones actually have phones that support Khmer, but only 38.8% of them claim to read Khmer on their phones daily or weekly, and only 44.1% claim to write in Khmer script on their phones daily or weekly.
- 97.3% of users of Khmer-enabled smartphones access Facebook via their phones.

3.5.10 Sources of News

The study found that for respondents, the most important source of news about Cambodia was TV (31.8%), followed by Facebook/Internet (24.9%). Radio was the third-most important source (20.5%) followed by word of mouth (17.8%). In 2013, TV and radio were the most important sources of news, with very similar percentages (38.9% for TV and 38.8% for radio). The third-most important source was Facebook/Internet, at 15.2%.

3.5.11 Use of Applications in Phones

The study found that the activity for which respondents used their phones most frequently was playing games (14.5%), followed by listening to music (13.4%), taking pictures (11.3%) and listening to the radio (11.2%).

Asked to name the three applications they most wanted on their next phone, respondents cited a large number of apps, but Facebook claimed the most interest (19.5%); it was followed by accessing the Internet in general (11.8%); and a camera (11.1%).

3.6 Response to the Main Question (Khmer-enabled phones)

The results of this study are expressed with a 95% security (Confidence Level).

The Confidence Interval (m) is calculated using the formula:

$$m = \sqrt{((t^2 \times p \times (1-p))/n)}$$

n = sample size

t = confidence level (standard value of 1.96 for 95% confidence level)

p = proportion of the sample who use Khmer phones

m = Confidence Interval

Given that the weighted percentage of users with phones that support Khmer is 63.3% of phone users, with a sample of 2,064 we can calculate the intervals for both confidence levels.

For 95% confidence, the confidence interval is 2.16. We can therefore express the result as:

With 95% certainty ($p \leq 0.05$), $63.3 \pm 2.16\%$ of Cambodians between the ages of 15 and 65 have phones that support Khmer Unicode messaging.

This implies that we are 95% certain that between 5,771,616 and 6,179,424 Cambodians between the ages of 15 and 65 have at least one phone that supports Khmer.

4 Discussion

4.1 Owning or Having Access to a Phone

The growth in the number of owners from 93.7% to 94.5% of the population in recent years indicates an already saturated market with little room for growth in terms of number of users. The big change detected in this study is in the quality of the phones, which is consistent with the deep economic changes that are taking place in Cambodia. We estimate that 10,214,830 phones are in use in the country, accounting for most of the consumers that can afford them.

Mobile phones have become a necessity for many people to keep in touch with family, friends and business partners. The reasons for not having one seem to be economic in most cases, or simply having no reason to use one. It was found that for young people, not having a phone was often a temporary condition brought about because their phone was broken, lost or stolen, and they did not have the money to replace it at that time. Among older people, we often found that they did not own a phone because they did not feel they needed one for communication purposes. However, the mobility of the younger generation, whether to work in garment or other factories, or to work in other countries, has led them to push phones onto their parents as a means of communication.

4.2 Phones

The main trends at the moment are the improving quality of phones and how they are used. Growth in smartphone penetration has increased slightly from last year, with more than 39.5% of Cambodians between the ages of 15 and 65 having at least one (up 41% from last year). This growth is not surprising, due to their popularity and low cost, along with economic development and the growing need to access the Internet and Facebook. The usage of smartphones is—as expected—much denser among the educated urban youth. Among brands, Apple grew the most during the past year, with almost 50% more Apple phones cited this year than in the 2014 study.

4.3 Phones Supporting Khmer

The 23.4% increase in the number of users with phones that support Khmer in the last year (almost 1,132,800 new users) likely reflects the fact that almost all new phones now sold in the country support Khmer script natively or have such support systematically installed in them. Still, the most recent growth figure is smaller than in the previous period, probably due to a pocket of resistance in the form of long-lasting, simple and inexpensive phones that are not yet being replaced, such as the Nokia 1280, which still accounts for 15% of all phones being used, despite not having been sold for two years. Some 63.3% of Cambodians are currently able to send and receive messages in Khmer. This number is expected to rise to almost 90% in the next two years as the old phones are phased out, promising to create the critical mass required for the launch of services that use Khmer text. Accordingly, the main reason offered for

not using Khmer is now illiteracy (compared to earlier main reasons such as skepticism about its usefulness and difficulty of use).

4.4 Writing and Reading in Khmer Using Khmer script

An increase of almost 50% in the number of people who type in Khmer on their phones shows how important phones, and especially using Facebook on phones, are becoming to Cambodians of all ages. It is significant that—proportionally—the strongest growth is occurring among the group that almost never wrote before: those above 40 years of age.

The increase in the number of people claiming to write in Khmer this year is smaller than the increase documented in 2014, when the then-recent elections and ensuing political turmoil seemed to encourage many to start writing on their phones to disseminate their political ideas. The smaller growth in 2015 is associated with the growth in the number of smartphones and of phones that support Khmer.

It is interesting to note that after the most-cited barrier to typing in Khmer—motivation—the next three main factors are all related to the input method, or the difficulty of typing in Khmer on phones. Fortunately, new developments appearing this year—particularly the Smart Khmer Keyboard developed by Kruy Vannak—have simplified data entry for Khmer script. It is the opinion of the authors that there is still room for improvement in the keyboard in terms of facilitating input.

4.5 Internet and Facebook

Almost one in three Cambodians aged between 15 and 65 claimed to use the Internet or to have used it at some point (3,068,000). As expected, the percentage of urban residents who use the Internet is much higher than for rural residents (44.6% for vs 27.37%). More than 88% of this group accessed the Internet through their phones; last year the figure stood at 71.5%. This shows that higher smartphone penetration is helping to boost Internet penetration, while at the same time the demand for Internet access is probably the motivation for the growth in the use of smartphones. While youth are leading the demand, with a much higher penetration rate, the relative growth in older users is higher, as it is coming from a much lower base in percentage terms.

More than one in three Cambodians (34.4%) said they used or had used Facebook (a higher number than claimed to use the Internet!). Most of this group's members (31.8% of the respondents) said they had their own Facebook account (3,001,920). This represents an increase of 66.5 in the use of Facebook in the past year. Their main reason for joining the site (*"to stay in touch with friends"*) tends to change after they have used it for some time to *"getting information about events or hot news in Cambodia."* However, most of these Facebook users claim to believe only 41%-60% of the information they receive via Facebook (sometimes) on average. Regardless of who posted, shared and

liked it, or where it was from, or what was attached to it, these users found it hard to fully believe or disbelieve this information.

Facebook was the most common choice when participants were asked which app they would want in their next phone (named by 19% amid a very broad range of preferred applications). It is currently the leading and most popular social media site in Cambodia, but not even close to being the most popular application, with participants saying they used their smartphones mainly for playing games, listening to music, taking pictures and listening to the radio.

In Cambodia, Facebook is accessed mainly from phones, with 97% of users having it on their phones. Only 3% of users access the site solely from a computer, while over 80% access it solely from a phone.

4.6 Preferred Media for Receiving News

An interesting result of this study is that Internet/Facebook has become for citizens the second-most important source of information about Cambodia, surpassing radio, and quickly approaching the number of citizens for whom television is the main source. This represents a huge change that mirrors, less drastically, the change that is taking place in developed countries, where even television is being displaced.

4.7 Gender-Related Aspects of Phone and Facebook Use

The numbers consistently show that there is a gap between men and women when it comes to the use of technology, but also that the gap is much smaller for younger age groups. There are 105 male phone users for every 100 women, but this number falls to 102 for those under 25. For users of Khmer-enabled phones, the number is 115 men per 100 women, but under the age of 25 this number is reduced to 106. For smartphone users, the large gap of 145 men for every 100 women is reduced to 132 men for ages under 25.

The data shows that the number of women writing Khmer in their phones has almost doubled during the year of political turmoil (2013-2014), returning to normal growth (around 50%) for the 2014-2015 period. The growth in the number of men who write on their phones has nevertheless increased, maintaining men/women ratios that are similar to the difference in ownership of smartphones. In 2013 there was already a gap between women and men who write in Khmer in their phones, with 144 men doing it for every 100 women (only 113 for those under 25). This ratio has increased to 151 men for every 100 women in 2015 (123 for those under 25).

Reading Khmer on phones is different for the young. While for women in general the numbers are similar to the ratios for *writing* in Khmer script (141/100), young women seem to be making better use of their non-smart Khmer-enabled phones than men, as the ratio of men to women who read Khmer in their phones is 106/100 (identical to the ratio for Khmer-enabled phones for the 15-25

group).

We can infer that an important part of this group are women reading Khmer on their non-smart phones, mostly reading private communication, and not the information that smartphones could give to them.

It becomes clear that access to a smartphone is key for access to information, and that women are lagging in this access. The numbers of male and female Internet users provide more information, as in this case the numbers do not agree. There are almost two men who access the Internet/Facebook for every woman who does (down to approximately 150/100 for ages 15-25, compared to 123/100 for smartphone ownership). Some 59.7% of female smartphone owners use their smartphones to access the Internet, compared to 74.7% of men. The number of women who use their smartphone solely for activities other than the Internet and Facebook (games, music, pictures, as declared by users) is therefore significantly higher than the number of men. While more data is needed to confirm the thesis, it appears likely from the above data that women have much less access to computers than men (33% of men access Facebook on computers, versus 10% of women).

The reason for not accessing the Internet is probably not economic, as they have had the means to buy a smartphone, and the additional cost of using the Internet monthly is very small. It is probably more closely related to a lack of motivation or knowledge on how to use it.

5 Conclusion and Recommendation

Cambodia seems to have reached a point at which the move towards 100% of phones being Khmer-enabled is irreversible. It is only a question of time before we see the remaining non-Khmer phones being replaced by new Khmer-enabled phones. At the rate of 1,616,400 phones per year (the average growth between 2013 and 2015), it will take about 2 more years to reach almost full coverage.

Smartphones are also advancing. The present 41% growth rate from 2014 and 81.5% growth from 2013 probably leave some room for further growth at the same rate for at least one more year, with dropping prices as a key factor for adoption by lower-income citizens. Smartphones are already a standard tool of communication in certain professional collectives with above-average income.

For literate users, the main factor that will lead to further active use of Khmer in phones will be the simplicity of entering text (typing). This simplicity will be achieved through more effective and user-friendly keyboards, and also through their ability to predict everyday Khmer text better.

As a primary conclusion, it is possible to say that as of this year one-third of Cambodians had entered the age of technology, using the Internet to access information and to communicate with friends, family and professional contacts. Growth in the number of users is still very strong; it would not be surprising to see more than half of Cambodians connected to the Internet by the end of 2016.

In order to increase the speed of adoption of usage of written Khmer script in phones, it is recommended that development of better input methods and text prediction for Khmer in phones be encouraged. This includes speech recognition for Khmer, as this is the input method of the future, but concentrating on smarter keyboards at the present stage is recommended.

Appendix A: The Questionnaire Instrument

KAP Survey on Mobile Phone in Cambodia 2015											
 <p>Open Institute # 08, Street 352, Boeng KengKang I Chamkarmorn, Phnom Penh, Cambodia Tel: 023 224 821 Website: www.open.org.kh</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Interview No.</td> <td style="width: 90%;"></td> </tr> <tr> <td>Interviewer Name</td> <td></td> </tr> <tr> <td>Interviewer No.</td> <td></td> </tr> <tr> <td>Date of Interview</td> <td style="text-align: center; border-bottom: none;">/ / 2015</td> </tr> <tr> <td>Interview Length</td> <td style="border-bottom: none; padding-bottom: 5px;"> From: _____ To: _____ </td> </tr> </table>	Interview No.		Interviewer Name		Interviewer No.		Date of Interview	/ / 2015	Interview Length	From: _____ To: _____
Interview No.											
Interviewer Name											
Interviewer No.											
Date of Interview	/ / 2015										
Interview Length	From: _____ To: _____										

Introduction

Hello, my name is I work for Open Institute as data collector. The Open Institute is conducting the study on "Mobile Phone in Cambodia 2015" funded by Development Innovations and Asia Foundation. The study aims at quantifying the number of Cambodians who have phones that allow them to communicate in Khmer script, as well as understanding their circumstances and the groups that they belong to. The selected-sites of this study are Phnom Penh, Kampong Cham (renewly-formed Tbongkhmum), Battambang (floating village in Pursat also), Stung Treng and Sihanouk Ville. The target group of the study is the Cambodian cell phone users aged from 15 to 65 years old. All information you provide will be highly kept as confidential. This interview will be taken approximately 15 minutes. So, would you please give me 15 minutes to interview with you?

Section I: Demographic Information

D 1	Vilage:	Village Code (2 digits)	D1	<input type="text"/> <input type="text"/>
D 2	Commune/Sangkat:.....	Commune Code (2 digits)	D2	<input type="text"/> <input type="text"/>
D 3	District:.....	District code (2 digits)	D3	<input type="text"/> <input type="text"/>
D 4	Province.....	Province Code (2 digits)	D4	<input type="text"/> <input type="text"/>
D 5	Code combined:	D5	<input type="text"/>	
D 6	Urban / Rural	1 = Urban 2 = Rural	D6	<input type="text"/>
Q 1	Repondent name:	<input type="text"/>		
Q 2	Age:	Q2 <input type="text"/> <input type="text"/>		
Q 3	Sex:	0 = Male	1 = Female	Q3 <input type="text"/>
Q 4	Marital status:	1 = Single – Never married 2 = Married /living with someone as married 3 = Widowed	4 = Divorced/separated 5 = Other.....	Q4 <input type="text"/>
Q 5	Level of Education:	1 = No formal schooling 2 = Primary School (K1-6) 3 = Lower Secondary (G7-G9) 4 = Upper Secondary (G10-G12) 5 = University (Undergraduate)	6 = Post Graduate 7 = Technical / Vocational 8 = Other (specify)	Q5 <input type="text"/> <input type="text"/>
Q 6	Do you have a mobile phone?	0 = No 1 = Yes	Q6 <input type="text"/>	
<i>If the answer is No, go to questions 6b and 7 and terminate the interview</i>				
Q 6a	Do you usually bring your phone wherever you go	0 = No 1 = Yes	Q6a <input type="text"/>	
<i>Go to question 8</i>				
Q 6b	Does anybody in your household have a phone?	0 = No 1 = Yes	Q6b <input type="text"/>	
Q 7	If somebody asks you to which phone they can call you, whose phone number do you tell them to call? 0 = I do not give them a phone number 1 = Spouse 2 = Neighbour Relative 3 = Neighbour not-relative 4 = Friend 5 = Phone Booth 6 = Other (specify)	Most usually Second most usual Third most usual	Q7 a <input type="text"/> Q7 b <input type="text"/> Q7 c <input type="text"/>	

Section II: Characteristics of Phone

Q 8	How many phones do you use?	(number of phones)	Q8	<input type="text"/> <input type="text"/>																																											
Q 9	Which network/mobile phone company(s) do you use most? 1 = Cellcard, 2 = Metfone, 3 = SMART 4 = Beeline 5 = Qb, 6 = Excel 7 = Other (specify) 0 = Not applicable	Q9 a Q9 b Q9 c	Most used Second most used Third most used	<input type="text"/> <input type="text"/> <input type="text"/>																																											
Q 10	What is the phone number that you use most ? Q10 a most used Q10 b second most used Q10 c third most used			<input type="text"/> <input type="text"/> <input type="text"/>																																											
Q 11	How much money do you usually spend per month on cell phone credit? US Dollars	Q11	<input type="text"/>																																												
Q 12	For how long have you been using cell phones?	Year(s)	Q12	<input type="text"/>																																											
Q 13	What are the characteristics of the cellphone(s) do you use?																																														
	<table border="1"> <thead> <tr> <th></th> <th>Brand</th> <th>Model</th> <th>Smart / Non Smart</th> <th>Input method</th> </tr> </thead> <tbody> <tr> <td>Phone 1</td> <td>Q13a1</td> <td>Q13a2</td> <td>Q13a3</td> <td>Q13a4</td> </tr> <tr> <td>Phone 2</td> <td>Q13b1</td> <td>Q13b2</td> <td>Q13b3</td> <td>Q13b4</td> </tr> <tr> <td>Phone 3</td> <td>Q13c1</td> <td>Q13c2</td> <td>Q13c3</td> <td>Q13c4</td> </tr> </tbody> </table>		Brand	Model	Smart / Non Smart	Input method	Phone 1	Q13a1	Q13a2	Q13a3	Q13a4	Phone 2	Q13b1	Q13b2	Q13b3	Q13b4	Phone 3	Q13c1	Q13c2	Q13c3	Q13c4		<table border="0"> <tr> <td>Q13a1</td> <td><input type="text"/></td> </tr> <tr> <td>Q13a2</td> <td><input type="text"/></td> </tr> <tr> <td>Q13a3</td> <td><input type="text"/></td> </tr> <tr> <td>Q13a4</td> <td><input type="text"/></td> </tr> <tr> <td>Q13b1</td> <td><input type="text"/></td> </tr> <tr> <td>Q13b2</td> <td><input type="text"/></td> </tr> <tr> <td>Q13b3</td> <td><input type="text"/></td> </tr> <tr> <td>Q13b4</td> <td><input type="text"/></td> </tr> <tr> <td>Q13c1</td> <td><input type="text"/></td> </tr> <tr> <td>Q13c2</td> <td><input type="text"/></td> </tr> <tr> <td>Q13c3</td> <td><input type="text"/></td> </tr> <tr> <td>Q13c4</td> <td><input type="text"/></td> </tr> </table>	Q13a1	<input type="text"/>	Q13a2	<input type="text"/>	Q13a3	<input type="text"/>	Q13a4	<input type="text"/>	Q13b1	<input type="text"/>	Q13b2	<input type="text"/>	Q13b3	<input type="text"/>	Q13b4	<input type="text"/>	Q13c1	<input type="text"/>	Q13c2	<input type="text"/>	Q13c3	<input type="text"/>	Q13c4	<input type="text"/>
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	15 = Copy of original phone: copy of.....																																														
	16 = Other (specify)																																														

Section III: Knowledge, Attitudes and Practice

Q 14	Do you know how to write Khmer script in a phone that has a numeric pad? 0 = No 1 = Yes	Q14	<input type="text"/>
Q 15	Do you know how to write Khmer script in a phone with a real keyboard? 0 = No 1 = Yes	Q15	<input type="text"/>
Q 16	Can your cell phone(s) display or write in Khmer script? 0 = no, 1 = yes, 2 = Don't know 3 = Not Applicable	Q16 a Q16 b Q16 c	Phone 1 Phone 2 Phone 3
	<i>If none of phones can display or write in Khmer script, please go to Q25</i>		
Q 17	Please indicate how often you write Khmer script in your phone(s) 1 = Never (N), 2 = Rarely (R), 3 = Every Month (EM), 4 = Every Week (EW) 5 = Every Day (ED)	Q17	<input type="text"/>
	<i>If the answer is different from 1 (Never) please go to Q20</i>		
Q 18	If you do not write Khmer script in your mobile phone, would you please tell the reason why? 1 = Illiteracy 2 = No critical mass 3 = Difficult to type 4 = Time consuming 5 = Typing Khmer script is not necessary 6 = Busyness 7 = Don't like typing Khmer script 8 = Other.....	Q18a1 Q18a2 Q18a3 Q18a4 Q18a5 Q18a6 Q18a7 Q18a8	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Q 19 If you do not write Khmer script, what factors will encourage you to write it in your phones?

- | | | |
|--|-------|--------------------------|
| 1 = Need critical mass | Q19a1 | <input type="checkbox"/> |
| 2 = Need typing training | Q19a2 | <input type="checkbox"/> |
| 3 = Simplify and improve the method of typing | Q19a3 | <input type="checkbox"/> |
| 4 = Khmer characters should be displayed in button | Q19a4 | <input type="checkbox"/> |
| 5 = Need to learn Khmer language | Q19a5 | <input type="checkbox"/> |
| 6 = Other..... | Q19a6 | <input type="checkbox"/> |

If you have answered question Q 18 and Q19, skip to Q21

Q 20 If you are writing Khmer script in your phones, would you please tell the reason why?

- | | | |
|---|-------|--------------------------|
| 1 = To uphold Khmer language | Q20a1 | <input type="checkbox"/> |
| 2 = Wants readers to easily understand | Q20a2 | <input type="checkbox"/> |
| 3 = Don't know English | Q20a3 | <input type="checkbox"/> |
| 4 = Can write what I really want to express | Q20a4 | <input type="checkbox"/> |
| 5 = Improve Khmer writing | Q20a5 | <input type="checkbox"/> |
| 6 = Saving contact name or song title | Q20a6 | <input type="checkbox"/> |
| 7 = Other..... | Q20a7 | <input type="checkbox"/> |

Q 21 Please indicate how often you read SMS or email or news in Khmer script in your phone(s)

Q21

1 = Never (N), 2 = Rarely (R) 3 = Every Month (EM), 4 = Every Week (EW) 5 = Every Day (ED)

If the answer is different from 1 (never), please go to Q25

Q 22 If you never read SMS or email or news in Khmer script in your phones, please tell the reason why?

- | | | |
|--|-------|--------------------------|
| 1 = Illiteracy | Q22a1 | <input type="checkbox"/> |
| 2 = No critical mass | Q22a2 | <input type="checkbox"/> |
| 3 = No SMS, news or email in Khmer to read | Q22a3 | <input type="checkbox"/> |
| 4 = Don't know how to check SMS, news or email | Q22a4 | <input type="checkbox"/> |
| 5 = Other..... | Q22a5 | <input type="checkbox"/> |

Q 23 If you never read SMS or email or news in Khmer script in your phones, what factors will encourage you to do it?

- | | | |
|---|-------|--------------------------|
| 1 = Need critical mass | Q23a1 | <input type="checkbox"/> |
| 2 = Khmer characters should be displayed in button | Q23a2 | <input type="checkbox"/> |
| 3 = Need to learn Khmer language | Q23a3 | <input type="checkbox"/> |
| 4 = There must SMS, news or email in Khmer to read | Q23a4 | <input type="checkbox"/> |
| 5 = Need someone to teach how to check SMS, news or email | Q23a5 | <input type="checkbox"/> |
| 6 = Other..... | Q23a6 | <input type="checkbox"/> |

If Q22 and Q23 are answered, skip to Q25

Q 24 If you are reading SMS or email or news in Khmer script through your phones, would you please tell the reason why?

- | | | |
|---|-------|--------------------------|
| 1 = To know the meanings | Q24a1 | <input type="checkbox"/> |
| 2 = Comprehensively easy to read | Q24a2 | <input type="checkbox"/> |
| 3 = Don't know English | Q24a3 | <input type="checkbox"/> |
| 4 = Spend less time to read | Q24a4 | <input type="checkbox"/> |
| 5 = Friends and relatives also use Khmer script | Q24a5 | <input type="checkbox"/> |
| 6 = Other..... | Q24a6 | <input type="checkbox"/> |

Q 25 Please indicate how often you write Khmer language in your phone(s) using Latin characters

Q25

1 = Never (N), 2 = Rarely (R), 3 = Every Month (EM), 4 = Every Week (EW) 5 = Every Day (ED)

Q 26 Do you know what Facebook is? *If No, please go to Q31*

0 = No 1 = Yes Q26

Q 27 Have you ever used Facebook *If No, please go to Q31*

0 = No 1 = Yes Q27

- Q 27a** Do you have Facebook account? If yes, how many accounts? Number (No = 0) Q27a
- Q 27c** Why did you initially join Facebook
 1 = To stay in touch with family
 2 = To stay in touch with friends
 3 = Business reasons
 4 = Get information about events in Cambodia
 5 = Get information on a variety of topics
 6 = Express or share my opinions
 7 = For entertainment and games
 8 - Don't know
 9 = Other _____
- Q 27d** Now, what is most valuable in facebook for you?
 1 = To stay in touch with family
 2 = To stay in touch with friends
 3 = Business reasons
 4 = Get information about events in Cambodia
 5 = Get information on a variety of topics
 6 = Express or share my opinions
 7 = For entertainment and games
 8 - Don't know
 9 = Other _____
- Q 27e** What do you do the most often in Facebook?
 1 = Read posts
 2 = read short articles
 3 = Look at pictures
 4 = Watch videos
 5 = Like or share posts
 6 = Create posts
 7 = Play games
 8 = Chat in Facebook messenger
 9 = Other _____
- Q 27f** How many percentage would you trust information in Facebook and other social media when:
 27f1 it is posted by individual I trust? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f2 it is shared by individual I trust? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f3 it is posted by organization I trust? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f4 it is shared by organization I trust? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f5 it includes pictures? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f6 it includes videos? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f7 there are many likes/shares? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f8 it is from a Cambodian source? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f9 it is from an international source? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f10 it seem true/might? 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
 27f11 Other reasons _____ 1 = 0%, 2 = 1-20%, 3 = 21-40%, 4 = 41-60%, 5 = 61-80%, 6 = 81-100%
- Q 27b** Do you use Facebook in a phone, in a computer, or in both 1 = Phone 2 = Computer 3 = Both Q27b
If 2, please go to Q29
- Q 28** Do you use Facebook on your phone? *If No, please go to Q29* 0 = No 1 = Yes Q28
- Q 29** Do you ever write Khmer in Facebook with Khmer script? 0 = No 1 = Yes Q29

Q 30	Do you ever write Khmer in Facebook with Latin characters?	<i>0 = No 1 = Yes</i>	Q30	<input type="checkbox"/>
Q 31	Do you know what Internet is? <i>If No, please go to Q33</i>	<i>0 = No 1 = Yes</i>	Q31	<input type="checkbox"/>
Q 31a	Do you use Internet? <i>If No, please go to Q33</i>	<i>0 = No 1 = Yes</i>	Q31a	<input type="checkbox"/>
Q 31b	What is the most important reason for you to use Internet	1 = Get news about Cambodia 2 = Get international news 3 = Read social news from friends and family 4 = Share social news from friends and family 5 = Access information on various topics (i.e. health, agriculture) 6 = Develop new skills or knowledge 7 = Access public government information 8 = Express your opinion about current events 9 = Entertainment (music, movies, etc.) 10 = Professional/work related		
Q 31c	What is the second most important reason for you to use Internet			
Q 31d	What is the third most important reason for you to use Internet			
Q 32	Do you use Internet on your phone?	<i>0 = No 1 = Yes</i>	Q32	<input type="checkbox"/>
Q 33	What applications do you use in your phone/s?			
Using				
1	Sending and Receiving SMS in Khmer			Q33
2	Sending and Receiving E-mail			1
3	Camera			2
4	Internet			3
5	Reading the news			4
6	Facebook			5
7	Skype			6
8	WhatsApp			7
9	Viber			8
10	Line			9
11	Listen to Music			10
12	Watching movies			11
13	Game			12
14	Radio			13
16	Twitter			14
17	Youtube			
18	LinkedIn			
19	Wikipedia			
20	Pinterest			
21	Reddit			
15	Other (Specify).....			
Q 34	Among the phone applications in the picture, which one is more interesting to you in a phone?			
<i>Use the categories in the above question</i>		<i>Q34 a First Choice</i>		Q34
<i>Show respondent the card of images of the applications of mobile phone</i>		<i>Q34 b Second Choice</i>		
		<i>Q34 c Third Choice</i>		
Q 35	What are your main sources of news about Cambodia?			
1 = TV 2 = Radio 3 = Newspapers 4 = Internet 5 = Facebook 6 = From SMS 7 = From telephony voice service 8 = Mobile phone applications 9 = Word of mouth 10 = other.....		Most important	<input type="checkbox"/>	
		Second	<input type="checkbox"/>	
		Third	<input type="checkbox"/>	
Q 36	Have you ever received any automatic call from your mobile operators? <i>0 = No 1 = Yes</i>	Q36	<input type="checkbox"/>	
Q 37	If you have, how often you have picked up that automatic call? <i>1 = Very Frequently 2 = Frequently 3 = Occasionally 4 = Rarely 5 = Never</i>	Q37	<input type="checkbox"/>	

- | | | | | | |
|-----|---|---|--------------------------|---------|--------------------------|
| ○ 1 | After sending a Khmer script SMS to each one of the phones.
are you able to see the Khmer SMS correctly? | <i>O = No, 1 = Yes, 2 = Some, but incorrect, 3 = Not Applicable</i> | O1 a | Phone 1 | <input type="checkbox"/> |
| | | | O1 b | Phone 2 | <input type="checkbox"/> |
| | | | O1 c | Phone 3 | <input type="checkbox"/> |
| ○ 2 | Did you take a picture of the phones? | <i>O = No 1 = Yes O3</i> | <input type="checkbox"/> | | |
| ○ 3 | If the user has affirmed using FB in his/her own phone, Do you
see respondent's Facebook account on his/her phone? | <i>O = No 1 = Yes O2</i> | <input type="checkbox"/> | | |

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