THE POOR AND THE MOBILE PHONE RELATED SPENDING

Christopher C. Chepken, christopher.chepken@uct.ac.za#

Allan Muhalia, muhaliac Clarence@gmail.com*

# ICT4D HPI Research School, Department of Computer Science, University of Cape Town

*School of Computing and Informatics, University of Nairobi

ABSTRACT

In this paper, we present work done to find out how poor people in Kakamega east district in western Kenya are hard pressed to maintain their mobile phones. It reports on findings from a study conducted to find out how the poor use their mobile phones, their means of acquisition, top up dynamics, recharge and repair costs vis-a-vis their earnings and how they spend. Results show that over 80% of the population own mobile phones. 61% of all those who own and use mobile phones spend at least 10% of their disposable income on mobile phone. Some people at the bottom of the pyramid forgo other important basic needs at the expense of maintaining their mobile phone. Is this development? We ask. We conclude by observing that, unless positive policy or otherwise intervention is put in place, leapfrogging is not likely to happen among the poor in developing countries even with the high uptake of ICTs.

KEY WORDS: LDGS, ICT, mobile phone, Poverty

1. INTRODUCTION

In the past few decades there have been many attempts and studies on the use of ICTs as a catalyst for socioeconomic development. The greatest challenge to many of these attempts has always been access and cost of ownership. The entrant of mobile phones in the ICT ecology eliminated the challenge of Access. According to ICT statistics leader ITU In
2010, mobile cellular networks already cover close to 90% of the world population, and we expect coverage to reach 100% by 2015, eliminating the need for expensive infrastructure such as cabled networks. This extensive network seems to have driven usage and subscription with over 3.8 billion being in the developing world in 2010 and an expected 12% growth rate until 2015 [ITU, 2010]. Further, majority of these mobile phone users are said to be in rural Africa. The proportion of rural households with a mobile telephone has reached, or now exceeds, 50% in many developing countries [ITU, 2010]. The increased usage in some ways may indicate systematic decrease in the cost of mobile communication. Mobile cellular services are much more affordable, with an average monthly cost of 15 PPP$ in developing countries compared to around 18 PPP$ in developed countries [ITNEWSAFRICA, 2010]. Many African people from diverse backgrounds are using mobiles with over 500 million subscribers in Africa in June 2010 [Allafrica.com, 2010] quoting from Informa Telecom and Media. The uptake of mobile phones from an overall point of view seem to have its advantage, indeed studies have suggested that for every ten new mobile phones in 100 people population there is a 0.6% GDP growth [Sparks, 2008], this is good news to the developing countries that are badly in need of an economic boost.

However, within the same period that there has seen an increase in mobile phone penetration, poverty is said to be on the increase. Studies show that poor people use up to a third of their household income on mobile phone use, there are demeaning statistics that compare the availability of clean water, food and even proper toilets to the number of mobile phones e.g. [The New York Times, 2010]. All these studies indicate that there are more mobile phones than basic human needs. Could there be a link to the two events? Could we be putting emphasis on the technology at a macro level and assuming its impact on the micro level? Finally are the perceived benefits really beneficial to all?

Assuming that on average a poor person earns $2 a day, it may be possible that the average spending (i.e. on food, clothing, technology etc) can be more than their daily earnings. We
hypothesize that with no proper intervention, adoption and use of technology will impoverish more. Our hypothesis therefore was: people at the bottom of the economic pyramid forgo their basic needs at the expense of technology. We used mobile phones as a case. To proof or disproof this hypothesis, a study to find out how the poor use their mobile phones, their means of acquisition, top up dynamics, recharge and repair costs vis-a-vis their earnings and how they spend was conducted. We also asked them how they earn and how they spend their money/earnings.

The study was set up with the aim of finding out whether the perceived highly publicized mobile phone related growth and good on paper matches the reality on the ground or not. Our main concern was if the mobile phone growth, especially among the poor, reflect on the economic growth of the adopters. We draw our insights from a study we conducted in a rural village in Kakamega, Kenya on household income and expenditure. The study was inspired by the work of Abhijit V. Banerjee and Esther Duflo, the economic lives of the poor [Banerjee and Duflo, 2006] on how the poor use their earnings. Although their work was restricted to radio and television as ICTs, it gave a good picture of how the poor distribute their income. Our expectation is that findings from this study and similar ones can inform ICT and economic policy makers make an informed and balanced view on the ability of the mobile phone as a choice ICT medium in improving the lives of the poor.

In this paper, we describe the work done in Kenya, Kakamega east district. We report the findings of a research conducted to find out how people at the bottom of the pyramid (BOP) (a case of Kakamega East District) are affected by the technology with regard to forgoing their basic needs in place of mobile phone related charges. We show that although many people own and use mobile phones, direct economic gains are not as expected. However, we take into cognizance the fact that even if there are no direct economic gains, there may be indirect gains that are as a result of social aspects. This is shown by examples where some people have reduced their travel expenses because they no
longer need to do frequent visits when they need to communicate with friends or relatives, instead they call or send an SMS.

The remaining part of this paper is presented as follows: Section two gives background information. In section three, methodology used is presented while section four has the results and discussions. We conclude in section five.

2. BACKGROUND INFORMATION

In 2009 Safaricom of Kenya posted over $125 Million net profit [Safaricom,2009], Vodacom of South Africa $649.4 million [Businessweek, 2010] and MTN also of South Africa $1.97 Billion [Total Telecom, 2010]. This shows that the mobile service provision is at its peak in Africa and service providers are having a field day in terms of revenue collection. Could they be doing this at the expense of those below the poverty line?

These numbers are however contradictory to the realities on the ground. 320 million of the world’s extreme poor – those living on less than US$1 per day – call the African continent home [African Bank Development Group]. There is no place where extreme poverty is more evident than sub-Saharan Africa. Almost 50% of the population live on under $1 a day - the highest rate of extreme poverty in the world. [aDollar aDay, 2006]. They lack basic amenities and cannot afford proper health care, free and compulsory primary education is yet to be a reality in most African and other developing world countries, infrastructural development in Africa is a mess; low electricity penetration, poor roads infrastructure, just to list a few . The list of demands is endless

In these LDC e.g. the sub-Saharan Africa, high mobile phone penetration in the last decade even among the poor has been reported, however there has been very little to show for economic development except for cases where there have been interventions or where there
was viable economic activities in place before the introduction of mobile phones e.g. in cases of [Abraham, 2007 and Donner, 2009].

**Airtime top up and mobile phone recharge**

For clarity, we highlight some facts about the use of mobile phones and their related charges in Kenya. In the most preferred and widely used networks, a prepaid local SMS costs between USD 0.05 and USD 0.07 while a local call costs USD 0.11 to 0.21 per minute [The world factbook, 2010]. 98.8% of all active SIM cards are prepaid in Kenya. The cost ranges depends on whether you are calling within the network or out of network. Average mobile monthly expenditure is USD 10.41 while disposable income is USD 18.22 [Gillwald and Stork, 2008]. Apart from airtime costs and perennial mobile phone repair, rural mobile phone users pay for their mobile phone recharging. It costs about $0.25 for every recharge. Depending on the mobile phone and its use, a recharge can last for a maximum of up to one week and a minimum of a day.

3. **METHODOLOGY**

The study was conducted in Kakamega east, a rural Kenyan district that is located approximately 400 KMs west of Nairobi. It is part of the larger Kakamega county which has a population of 1.6M people [Kenya National Bureau of statistics economic survey 2009] Kakamega East district is a farming district with a population of 138 thousand people. The major source of income is small scale farming, where products are transported for subsistence consumption within the countries larger cities. According to the Kenyan Bureau of Statistics, the average house hold income in the district is approximately $2.0, the poverty level stands at over 50% and 85.1% of the population is literate. All of Kenya’s four mobile service providers have a presence in the district, with 100% mobile network coverage. The usage of mobile phones is both a personal and business use, with many users making use of the phone to contact relatives who are in the city and other urban
settings. The larger rural population top up/recharge mechanism is by way of the relatives in the urban area passing on credit to the rural folk.

The sample size for this study was 597 respondents. This was a too large number to administer questionnaires for two people hence the need to recruit and train research assistants. We recruited and trained a total of seven research assistants, specifically on how to administer questionnaires and more importantly how to conduct interviews. When choosing our research assistants the local language and culture was important. They could all speak in Luhyah, the local language, Swahili, the national language, and English which is the writing language. Age was not an issue to us as we made an assumption that familiarity to the area under study was enough. Education level was also taken into consideration. All our research assistants had a minimum education level of grade 12 with three of them being primary school teachers.

In order to have a somewhat convincing argument we adopted both qualitative and quantitative form of study. We used Descriptive research method [Mugenda and Mugenda, 1999], as we wanted to get information directly from the respondents about the problem. Descriptive studies basically deals with describing characteristics of particular individual or a group and in this case, it represented the rural population of Kakamega East district. Case study method utilizing Questionnaire and face to face interviews was utilized during the survey. We chose Kakamega east district for a number of reasons, one was because we had an idea of the poverty index in the region, which was about 63% [Kenya National Bureau of statistics economic survey 2007]. The second reason was the fact that around Kakamega Town had informal settlement areas known as slums, which in most cases an indication of indication of poverty ridden areas. Finally, Kakamega was an ideal location for us as we had an easy access to the community as well as the administration. One of the researchers originally hailed from Kakamega east and hence was familiar with the local language and culture. These provided the researchers a good working relation with the community and the administration.
Based on a population of 138,000, a sample size of 597 was chosen for this study. This was arrived at by using a statistical calculator applying a statistical formula described in [Creative Research Systems]. With a confidence level of 95\% and statistical margin of error of 3\%, a total of 600 questionnaires were distributed. The questionnaires were meant to give us information on the demographic distribution, income level, and phone ownership and subscriber earnings. This information helped us formulate interview guiding questions in a way that would not lead us into either asking leading questions or those that would generate redundant information.

The area under study had network coverage from the three major mobile operators in Kenya i.e. Safaricom\(^1\), Zain\(^2\) and Orange\(^3\). This means that service provision to the subscribers is competitive. Eighty percent of all the respondents had mobile phones. Geographically, over 80\% of the western Kenya region has network coverage and in Kakamega east district, network coverage can be said to be at 100\%.

Although we encouraged informal interviews, it had guiding questions that aimed at giving information about: Income level per day per subscriber, with sub – questions such as the amount of earnings per day or per month depending on the type of work, whether contract or permanent. The second issue was on Phone ownership and usage, with the intention of knowing whether one owned a mobile phone or not and if yes, how do they use it. We also asked about ownership reasons; – whether for social or business use. In guiding question number four, the idea was to find out how the respondents maintain their phones. We interpreted maintenance as charging, mobile phone repair and airtime costs. Any Social aspect that may be competing with mobile phone maintenance was the fifth guiding question. The concern here was to see if there is any social expenditure such as taking a friend for drinks, that compete with mobile phone expenditure and what is the apportioning like between the two? Perception questions on transport substitution, employment, social cultural factors were also asked. This question was informed by the argument that mobile phone adoption and use are not necessarily economics only and hence the importance of
picking out other benefits. For example we wanted to find out if it’s true that mobile phone communication, whether business or social can reduce the number of trips to a certain place and therefore reducing traveling cost. Finally, the last question was what the respondents would like to see changed with regard to top regulatory intervention for adoption and universal of mobile phones.

Editing (also referred to as raw data verification) is vital role in the process of carrying out data processing and indeed as noted by Kothari [Kothari, 2004] involves careful scrutiny of completed questionnaires to assure that Data collected is accurate and consistent with the facts gathered and have been properly arranged to assure accurate coding and tabulation.

Central mode of editing was chosen over field editing, the central editing was better given that the researcher could review the entire questionnaire at the end of the day with the assistance of two assistants. Individual questionnaires could be easily tracked to the particular interviewer as they had the date, time and name and the location of the interview. This assisted the editors to refer easily in case of abbreviated inputs on the questionnaires.

To make analysis friendly the questionnaire was coded on the basis of every questions and numerals assigned. SPSS software tool was used for carrying out analysis that was based on subject theme, simple statistical correlation and cross tabulation analysis was used to carry out quantitative analysis that was used to inform conclusions on certain constructs.

4. RESULTS AND DISCUSSIONS

In this section, results, based on the seven guiding questions are presented. Discussions on specific items follow immediately after the item’s results presentation.

In the past, results of similar kind of studies have been presented in a quantitative manner, mostly in a form of complex statistical analysis. Based on our study method and for easy dissemination to other parties, a more descriptive method was adopted. We used frequencies, correlation analysis and cross tabulation to evaluate and analyze the findings.
In this section we present the results. Although we took all the necessary care, including cross checking randomly selected questionnaires against interview data, these results may depict the actual situation on the ground with some error margin. We are however hopeful that the results provides data that can be used as a starting point for further investigations.

4.1 Population

With a total of over 500 participants in the study, our target was a 1:1 ration of male to female of respondents, but this was not possible. Instead, we ended up having 45.3% female and 54.7% male.

The population that participated in research was predominantly below fifty five years. 91.6% were the age of fifty six and below while those that were aged above fifty six years made just 8%. The ages 10-35 years accounted for 68% of the respondents which is well within the national population distribution currently suggesting that the age below 40 years account for 60% [Kenya National Bureau of statistics economic survey, 2006]

The distribution based on age was a critical factor in this research given the fact that age is a factor in most technology models, particularly adoption and use. This was also meant to check on the most productive age bracket as this is the age that most people earn a living by working as opposed to being dependent on others.

4.2 Literacy

On literacy, we found that cumulatively more than 70% of the population has attained education up to secondary school level and 2.5 % with no formal schooling .This statistics has a relationship with the statistics on employment and level of income as they are correlated. Those who have attained grade 8 (primary school) accounts for 34.6% while those with no formal education make up 2.2%. We found these numbers strange as the estimates by CIA fact book [The world factbook, 2010] indicates that 85% of all Kenyans
are literate. Unless we say that some people who finish primary school cannot write and read, then it will be tempting for one to interpret our findings to mean that only about 2.5% of Kakamega east district are illiterate, which can also be acceptable as the district is within the larger Kakamega Town.

### 4.3 Earnings

#### Table 1: Respondents daily income

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 80</td>
<td>39.4</td>
<td>39.4</td>
<td>39.4</td>
</tr>
<tr>
<td>81 – 100</td>
<td>19.4</td>
<td>19.4</td>
<td>58.8</td>
</tr>
<tr>
<td>101 – 200</td>
<td>16.9</td>
<td>16.9</td>
<td>75.7</td>
</tr>
<tr>
<td>201 – 300</td>
<td>8.0</td>
<td>8.0</td>
<td>83.7</td>
</tr>
<tr>
<td>Above 301</td>
<td>16.3</td>
<td>16.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The question was: What is your daily income in Kshs?

Majority of our respondents (58.8%), as presented in table 1, earn less than us dollars 1.25 a day. The daily income for this group is far below the national minimum wage by 50% (National minimum wage is about USD 2.5 per day). This may be interpreted as that the mobile phone ownership and maintenance is more of a burden to this group of people. The earnings per day reflect the global statistics of people who are at the bottom of the economic pyramid, who earn less than 2 dollars and who in practical terms, even if access to ICT service was available to them, it would still be difficult to close the gap unless their economic issues are handled. Surprisingly these people still use and maintain mobile phones.

#### Table 2: Cross tabulation daily income vs. Phone Acquisition method

<table>
<thead>
<tr>
<th>What is your daily income in Kshs?</th>
<th>Below 80</th>
<th>81 - 100</th>
<th>101 - 200</th>
<th>201 - 300</th>
<th>Above 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>449</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Two main means of mobile phone acquisition were seen: through buying and gifts. The majority who acquired their phones as gifts are those earning below a dollar a day (the current exchange rate is about Kenya Shillings eighty to a USA dollar). The low income groups depend on buying low end phones and gifts in equal measure. About 31% of all the respondents who earn less than US dollars 1.5 a day acquired their phones as gifts from friends or relatives.

From table 2, it can be deduced that as income level goes up, the number of those who bought their mobile phones increase. The cost of acquiring a phone was very important to this study. We found out that most of the phones were acquired at prices below less than five thousand Kenya shillings (less than US dollars 70). From our market review at that time, such phones did not have any internet capability or any other extra fancy features. It is however possible the situation may have changed hence eliminating the need for having it as an important discussion point..

Majority of the people interviewed had a mobile phone and the networks were available. This represents 80% of the respondents. Only 9% of the respondents did not have any access to any means of communication save for the traditional methods.

### 4.4 Mobile phone maintenance and acquisition

Over two thirds of our respondents maintained their mobile phones using salary or wages and business proceeds. 67.8% of them respondents were classified as being under this

<table>
<thead>
<tr>
<th>How did obtain your mobile phone</th>
<th>Gifts</th>
<th>Employer's</th>
<th>Bought</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49</td>
<td>1</td>
<td>77</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>1</td>
<td>55</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>3</td>
<td>55</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>26</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>7</td>
<td>62</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>7</td>
<td>276</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>174</td>
<td>86</td>
<td>76</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>444</td>
</tr>
</tbody>
</table>
category. On average this group spent between 12% and 25% of their income on mobile phone maintenance.

Table 3: Basic needs competing with mobile phone expenditure

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>103</td>
<td>22.9</td>
<td>23.9</td>
<td>23.9</td>
</tr>
<tr>
<td>Shelter</td>
<td>12</td>
<td>2.7</td>
<td>2.8</td>
<td>26.7</td>
</tr>
<tr>
<td>Clothing</td>
<td>29</td>
<td>6.5</td>
<td>6.7</td>
<td>33.4</td>
</tr>
<tr>
<td>Health and Education</td>
<td>5</td>
<td>1.1</td>
<td>1.2</td>
<td>34.6</td>
</tr>
<tr>
<td>Do no sacrifice</td>
<td>282</td>
<td>62.8</td>
<td>65.4</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>96.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>18</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>449</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The key objective of the study was to find out whether some people acquire and maintain their mobile phones at the expense of some basic needs. Table 3, shows some of the needs mobile phone users in Kakamega east district sacrifice to allow then run a mobile phone. From our findings, 23% of our respondents sacrifice on food, 2.7% on shelter and 6.7% on clothing. For example on food, some people reported that they would skip a meal, mostly a lunch to allow them buy airtime or pay for their phone recharging costs. It was not however clear how some needs were being sacrificed, for example shelter.
Over 50% of the total population owning mobile phones, 35.4% of all the respondents, sacrifice one thing or the other to make sure that they run their mobile phones. This in essence may mean that access to mobile phone is more burdening to the population than may be imagined.

It was found that 61% of the respondents earned less than 1.25 dollars per day which translates to about 30 dollars per month. This means that 61% of the rural population spent 20% of their income to carry out a one off payment on a mobile phone for every month that they buy a phone with a price tag of less than USD 70. If unlucky to receive one as a gift from a friend or relative, this may be interpreted as that a mobile phone acquisition require the subscriber to use their savings, if any or forgo other things.

Amid all the spending and forgoing, it was interesting to note that people were willing to spend on mobile phones at the expense of other basic needs. For further work, there may be a need to find out the forces that drive this behavior as this was not part of our research questions.

3.5 Airtime expenditure.

It was found that persons who earn below USD 1.5 a day preferred to buy air time of either USD 0.29 or USD 0.70 denominations. This group accounted for 67% of the total population. The main reason for this top up category was because it is assumed to be cheap and thus affordable. However, although on average this group topped up airtime three times a week, some could reload more than once in a day depending on the need to communicate. Therefore this does not necessarily mean that the low denominations reload vouchers are good for the poor, but rather provides a flexible way of topping up. On average, people earning under USD 1.5 per day would spend a minimum of USD 3.5 and a maximum of USD 8.4 per month on air time. This represents a minimum of 10% and a maximum of 20% of their monthly earnings.
On average the low income groups spent between 10%-25% of their income on mobile phone communication and this is still much higher than the thresholds in the developed world where this needs to be below 5% of the disposal income.

5. CONCLUSION

In this paper, we have presented the results of collected study done to find out how poor people in Kakamega east district from Kenya cope with high cost of maintaining their mobile phones. The results showed that although mobile phone uptake by the poor is higher than expected, their acquisition is through sacrifice that sometimes requires forgoing the very basic needs. We note that this maybe as a result of failure on the side of policy makers and the lack of good will by mobile phone subscribers. Unless policy makers (mainly governments) and providers realize that the poor needs special attention, the much talked about economic divide is not likely to shrink very soon.

6. REFERENCES


