Mobile phones and Health care

An analysis of the efforts by Google, Grameen Foundation and MTN to deliver health care information via SMS
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ABOUT THE STUDY
This research project is under the auspices of National Science Foundations’ International Research Experience for Students. The project seeks to develop case studies on how technologies are implemented in resource-poor settings in the world. The case study will be used teaching global information technology issues in US and African classes. The research is managed by The Southern University’s International Center for Information Technology and Development (ICITD), USA, and Makerere University Business School (MUBS), Uganda.

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ABSTRACT
This report explores the preliminary lessons in the use of mobile phones to promote access to health care information in Uganda. The project under study is the AppLab Uganda Project which operates a Health Tips application, educating users on sexual and reproductive health. Data was collected through in-depth interviews with project developers, partners, medical practitioners and IT journalists and a survey of 149 people randomly selected from two tertiary educational institutions in Uganda. Findings tend to suggest the need to access health information via mobile text messages is mediated by cost incentives; misconceptions of brand name ‘Google SMS’, and content relevance. There are questions concerning the appropriateness of text messaging as compared to using voice calls access health information. These issues have implications on the objectives of the health care project and the individual strategies of project partners. Preliminary conclusions emphasize the need to integrate a referral system to registered health professionals and facilities and the need for education and/or a marketing strategy with an indigenous branding to address the misconception of the brand name ‘Google SMS’. Implications to research, policy and practice are outlined.

Keywords: mobile health, health care information, Uganda, Google

INTRODUCTION
There has been a tremendous increase in mobile phone diffusion in developing countries. Statistics from the International Telecommunication Union (2008a) suggests that there are now more mobile phone users in the developing world than in the developed world. In countries like Uganda, it is estimated that, there are mobile phone subscriptions have increased by 1700 percent between 2002 and 2008; the mobile phone subscriptions per 100 inhabitants in 2002 was 1.51, and that of 2008 was 27.2 (ITU, 2008b). This phenomenal global diffusion of mobile phones in developing countries has sparked debates on how developing countries can effectively harness this innovation for development (Heeks and Jagun, 2008). It has been argued that mobile phones have a multi-stranded impact on the poor and hence there is a need for a more comprehensive approach to conceptualize the link between mobiles and development (Duncome and Boateng, 2009; Boateng, 2010).

Our attempt to respond to this call for research begins with a study on exploring the use of mobiles in health care in a developing country in Sub-Saharan Africa, Uganda. The need for affordable and accessible health care services in sub-Saharan Africa (SSA) and its rural areas is critical. The current health statistics are not encouraging. First, the primary challenge is the lack of well-trained medical health professionals and facilities. Many rural areas are without physicians especially specialists. On an average, most countries in SSA have less than 20 doctors per 100,000 people and a majority of new medical doctors and nurses seek for jobs in richer countries (WHO, 2006; WHO, 2008). Moreover, where accessibility to health care exists, affordability becomes another issue. The inhabitants of SSA only spend an average of US$ 6 per capita compared to US$ 287, US$ 250 and US$ 273 per capita, respectively in the United States, the European Union and Japan (WHO, 2008). Health care services are therefore beyond the reach and means of many rural areas. Second, sub-Saharan Africa’s epidemics vary significantly from country to country in both
scale and scope. Recent statistics suggest that diabetes and HIV seem to be the overriding health problem in this sub region of the world. An estimated 1.9 million people were newly infected with HIV in sub-Saharan Africa in 2007. In total, 22 million people are living with HIV in the region, which is two thirds (67%) of the global population of people with HIV (AVERT, 2008). Another killer disease that is plaguing SSA is malaria. Approximately 60% of the population of SSA live in endemic areas and are at risk for malaria. 9 out of 10 of malaria deaths occur in sub-Saharan Africa, the majority being children. Further, the WHO estimates that in every 30 seconds a child dies of malaria in Africa (WHO, 2009). The socio-economic impact of this situation is felt across sectors of activities – agriculture, education, industry, transport, and human resources.

With these resource challenges, a preventive approach to healthcare in sub-Saharan Africa cannot be over emphasized. However, health education, which plays a major role in the prevention of many diseases, is often ineffective or nonexistent. Electronic medicine (e-medicine) has been proposed as a reasonable approach that offers a set of new and innovative health solutions applicable to resource-poor environments (Kifle et al., 2006). E-medicine is defined as the use of telecommunication and information technology to provide health care to people who are separated by geography and distance from the provider. In these resource-poor settings, the approach is to examine how low-cost, low-tech and more accessible technologies like mobile phones can be used to enhance efforts in a preventive approach to healthcare. Such technologies underpin opportunities for health education and monitoring patient compliance. E-medicine opens a new avenue to address and fill the existing gap.

Our study seeks to explore the preliminary lessons in the use of mobiles to promote access to health care information in Uganda. The project under study is the AppLab Uganda Project. The Application Laboratory is an initiative of the Grameen Foundation. Grameen Foundation, Google, and MTN Uganda have been working together since September 2007 to build the physical, human, and technological infrastructure needed to support the initiative. In Uganda, the AppLab runs The Health Tips Application which educates users by answering common questions about sexual and reproductive health. It provides users with timely, trusted, accurate, and actionable information. The application also provides information on sexual and reproductive topics pertinent to adolescents, such as body changes and sexual abstinence. The project completed its pilot phase in 2009 and has since been rolled-out nationally.

This study explores the impact or ‘potential impact’ of the Health care Tips Application in health care in Uganda. It details the health care outcomes and the challenges in deploying and managing the application in the developing country. The underpinning research question of this study is, how can mobile phones be used to support health care activities and what is the potential impact?

RESEARCH METHODS

The study used a mixed methods approach. First, a case study approach to document AppLab project and develop in-depth understanding of the usage and impact of Google SMS Health Tips Application (GSHTA) among a cross-section of users. Data was obtained through 13 semi-structured interviews with the project manager of the AppLab project; two personnel of the MTN Village Phone project; the content manager of Straight Talk, a local content developer for the project; and with nine users comprising of three students, two lecturer, two information technology (IT) journalists, one IT manager and one medical doctor. A focused group discussion was also conducted with six of the users and the project manager of the AppLab project. The objective of the focus group was to create a forum for discussing the project objectives and user perceptions and experiences. Interviews were recorded, transcribed and coded into themes to develop constructs explaining the usage and impact of GSHTA.

Second, in a follow-up to the case study, a survey was conducted to investigate the usage and impact of GSHTA on larger population of potential users. The potential users were randomly selected from the campuses of two leading tertiary educational institutions in Kampala, Uganda. Educational institutions were selected as an appropriate site for study since GSHTA was primarily targeted to young adults. The 20 item questionnaire was administered to 149 users. The response rate was a minimum of 91 percent across all the questions on the questionnaire. The questionnaire was structured in four parts: the demographics, mobile phone usage behavior, mobile functions usage and awareness and usage of GSHTA. Data was analyzed through a descriptive statistics – frequencies and cross-tabulations – to develop understanding mobile phone usage behavior of users and the usage and impact of GSHTA.

ABOUT UGANDA

Uganda is located at the geographical heart of Africa and has a national population of 32 million and more than 30 different indigenous languages. More than 80% of the workforce is employed through the agriculture sector. However, Uganda’s services industry accounts for more than 50% of the nation’s gross domestic product (GDP). The landlocked country contains natural resources, including fertile soils, regular rainfall, copper, and gold. Nearly 50% of the nation’s population is between the ages of 15–64. With an average 53-year life expectancy at birth, Ugandans...
are faced with healthcare issues deriving from infectious diseases such as, malaria, Hepatitis A, and typhoid fever. Uganda is a successful model for Africa in the fight against the HIV/AIDS epidemic. In the 1990s, the HIV/AIDS prevalence rate was nearly 29% in urban areas. The current HIV/AIDS prevalence in Uganda is estimated at 7%. Government leadership, broad-based partnerships, and effective public education campaigns all contributed to the decline. Despite the remarkable decrease, an estimated 1.1 million people are still living with HIV/AIDS in Uganda, which includes 120,000 children. Devastating consequences, including social and economic, continue to affect the country. In 2008, 61,000 people died from AIDS and 1.2 million children were orphaned [AVERT, 2010].

Uganda has a strong cultural heritage since people from various origins inhabit the region. Traditions also are expressed through a wide range of arts and crafts made from wood and papyrus reeds.

**AppLab Uganda’s Health Care Applications**

The AppLab Initiative was officially launched in Uganda on June 29, 2009. AppLab Uganda is made possible through collaboration between Grameen Foundation, Google and MTN Uganda. This partnership, established in September 2007, taps into the core expertise of each organization. The Grameen Foundation has extensive experience using technology as an enabler for building sustainable and scalable business models designed to improve the lives and livelihoods of the poor. Google is the worldwide leader in search technology, organizing the world’s information and making it accessible. MTN operates the platform of Village Phone Operators and Shared Phone Operators in Uganda— a unique distribution channel for reaching underserved markets, as well as the communication infrastructure serving the whole country.

AppLab Uganda provides a service known as Google SMS. Google SMS is a group of mobile applications that allows users to access information services. Google SMS facilitates three applications - Information Tips Application, General Web Search and Google Trader – in Uganda. The information tips application allows users to simply text message a search query to 6001, and the application will text message back the results. Users can use this SMS application to obtain information tips on health care, agriculture and the weather. The General web search application users to search for anything on the worldwide web through Google SMS. Users text queries to 6007. The Google Trader application is a trading platform were users can buy and sell goods and services through SMS. Users register, make submissions and query the trading platform by texting to 6006. In Uganda, Google SMS services are exclusive to MTN mobile subscribers. Google SMS is currently free from Google but charges from the MTN for usage apply to the general search and Google Trader application. Text queries to the Information Tips application (6001) are currently free till December 2010.

This study focuses on the use of Google SMS in health care. Google SMS Health Tips and Google SMS Clinic Finder enable users to find information on sexual and reproductive health care and to locate health care facilities in Uganda respectively. Uganda has a high demand for information on HIV/AIDS, sexually transmitted infections, and reproductive health. Uganda’s Ministry of Health estimates the adult prevalence of HIV/AIDS (15-49 years) in 2005 was 7.0% (Uganda HIV/AIDS Sero-Behavioral Survey, May 2005). The accuracy of information sexual and reproductive health care is essential to dispel local myths and help them make informed decisions. The Health Tips Application, primarily targeted at young adults, educates users by answering common questions about sexual and reproductive health. It is aimed that the information provided should be timely, accurate and actionable. For example, users can text “Health pregnancy” to learn what to do if you are pregnant and how to prepare for a safe labor.

The Clinic Finder offers a directory providing the details of local clinics, including the types of services offered as well as the hours of operation. This searchable directory makes it easier for users to find appropriate medical assistance. For example, users can text “Clinic Kampala” to locate health facilities in Kampala. The application also enables patients to find answers to questions that arise after treatment.

The content for the health care tips application is provided through two local partners; Marie Stopes Foundation Uganda and Straight Talk. Marie Stopes Foundation Uganda is a leader in Sexual and Reproductive Health and provides content for the Health Tips and Clinic Finder Service. Straight Talk is a leader in health communication in Uganda and provides content for the Health Tips and Clinic Finder Service.

A pilot study was run for GSHTA between June to December 2009. Over the six months, the code 6001 received 2,426,298 hits from 654,442 unique users. However, these statistics comprise enquiries on health care tips, agriculture tips and weather tips. The project manager intimated that, in reference to non-disclosure policies, none of the partners has access to sufficient information to develop a profile on a potential user. Hence, MTN has statistics on hits to a particular service – 6001 – however, it has no statistics on the content of queries made by users. Google, alternatively, has statistics on the content of the queries made from the service but no information on the unique mobile number initiating a query. Occasionally, Google presents a summary report on the content of queries received to MTN and the local content providers. This information is used to improve the content provided through GSHTA.

Within this period of the pilot study all the services provided to the three Google SMS applications (6001, 6006 and 6007) were free. In January 2010, a fee was introduced for the Google Trader (6007). The introduction of the fee initiated a loss in the patronage of Google Trader service and led to a ripple effect across the two other applications. Between January to June (6th), the code 6001 received from 1,123,349 from 504,190 unique users.

**SPECIAL REPORT**

Sheila Price and Joseph Munuulo (RIGHT) testing the 6001 service

LaKenya (RIGHT) and Nurul discussing collected data
How Mobile Phones Support Health Care

This model proposes that through applications mobile phones can be used to support preventive and curative health care activities. Preventive health care activities cover health education and promotion to prevent the occurrence of illness or curb and control the outbreak of illness. Curative care activities cover treatment and post-treatment activities. Curative care also includes information and communication strategies which will inform decisions for urgent care (e.g., first aid) and enhance compliance to medical regimens and recommendations. We conceptualize mobile phones to have two effects – incremental and transformative – on compliance intervention strategies. Incremental effects characterize the effects from using mobile phones to enhance current preventive and curative health care activities. For example, mobile phones may enhance activities such as telephone education, feedback, scheduled appointments, monitoring, and reminders. In the case of the GSHTA it is primarily used to educate and provide information to access health facilities.

Transformative effects characterize effects from using mobile phones to create something new – new forms of compliance intervention strategies. Transformative effects may include developing new mobile-driven multi-media education strategies, goals and means to change the schemes of thought. For example, “Text to Change,” is a health non-profit organization running a project in Uganda, where the focus is on HIV/AIDS education as well as the promotion of HIV Counseling and Testing (HCT) services (TextToChange, 2008). In a six week pilot project targeted at 15,000 participants, a total of 255 participants came for HCT services and the response rate for the pilot quiz was on average 17.4% per question. The mobile-enabled HIV/AIDS education contributed to behavior to access HCT services among 255 participants. These examples demonstrate the transformative effects mobile phones may have on health care activities.

Based on the model the underpinning research question of this study is, How can mobile phones be used to support health care activities and what is the potential impact?

Findings from Focus-Group Discussion and Interviews

Findings from Focus-Group Discussion and Interviews

The six key issues were discussed in the focus group discussion and interviews. These issues cover misconceptions of the application’s brand name; education features; content errors and local language translations; collaboration with health care professionals; potential cost of GSHTA; and user feedback. The issues are briefly presented with feedback and answers from the AppLab project manager and content manager of Straight Talk.

Misconceptions of the Application

Brand name “Google SMS”

Two students commented that there is a misconception associated with brand name of the application. One of the students explained that, “most people associate Google with the Internet, hence, the name Google SMS, tends to imply that you need mobile Internet on the mobile phone in order to access it”. Another student also expressed concern that, using a local name – an indigenous Uganda word – to characterize the set of Google SMS applications could create a social connotation to services and therefore enhance adoption. In response, the project manager of the AppLab Project, explained that, concerning the brand name, though Uganda is the first country in Africa where these set of Google SMS applications have been deployed in Africa, Google has plans to extend implementation to other countries in Africa. Further, the applications which are currently exclusive to the MTN network will be made accessible to other mobile networks in Uganda and beyond. It was therefore necessary to keep a unique identity for the product vis-a-vis the long term plans. These long term plans coupled with primary role Google as a critical partner in the project.
contributed to the choice of the brand name. The content manager of Straight Talk also attested to these comments of the AppLab Project manager.

Lack of an Edutainment Feature

A medical doctor interviewed questioned that, considering the demographics of target users being predominantly young adults, it was necessary to introduce an edutainment feature like quizzes or a reward system like airtime, to sustain the interest of young adults and adolescents. The doctor argued that young adults have short attention spans and edutainment features could increase or sustain their interest in GSHTA.

An IT manager related this suggestion to the model used by the Text to Change in their health campaign. Text to Change used both quizzes and airtime as reward system to promote HIV/AIDS education. Users were referred to a hospital which led to an increase in participants accessing HIV Counseling and Testing (HCT) services. Reward systems may be considered important especially when the service becomes a paid service.

In response the content manager of Straight Talk, argued that, the project will fail to reach the users who actually need the information when a reward system is added. She emphasized that people should not be compelled or coerced to seek for information which will be of benefit to them, especially with health care. They should be made to understand the value of the information and why the information was important to them. Encouraging behavior change in health care should stem from understanding need for change or compliance to medical regimens and the consequence of non-compliance.

Content relevance and Local Language Translations

An information technologist-journalist also pointed out that the service often returned information which was not-relevant to the question asked. For example querying the system with terms which was both common to human health care and agriculture generates answers which were of irrelevant to either of them. A student also observed that, the system could accept queries in one local language ‘Luganda’ however, the answers were returned in English. This was considered inconsistent and less useable to those who were not literate in English, but at least literate in Luganda.

In response the project manager of the AppLab Project, explained that, though the application had been launched, it was still being updated to produce more relevant content. He acknowledged the existence of these errors and the feedback was necessary to improve the functionality. Concerning the content translation into local languages, he intimated that, it was initially planned that medical content will be translated into local languages. However, the team faced a number of challenges regarding the plurality of languages in Uganda and the plurality of words used to explain diseases/illness in local languages. Thus, the universality of interpretations of medical terminologies in across different languages in Uganda was quite far-fetched. Coupled with the long term objectives of Google to deploy the applications across Africa, content translation was stopped.

Referrals to Health Institutions or Clinic

A lecturer commented that the service often returned information which was very generic. It was considered that a referral clinic or telephone number to a registered health professional should be added to answers to queries with respect to relevance. The objective is not to prescribe but refer users to nearest clinic or health professional to obtain further information or help.

In response the project manager of the AppLab Project explained that there is currently no agreement with registered health professionals or clinics to be used as referrals. This was suggestion was considered worth exploring. He also added that, MTN has plans to add an interactive voice response (IVR) service to the application in the near future. This extension had been considered as they had received similar concerns from users preferring voice calls over text messages. The content manager of Straight Talk also discussed the challenge in the provision of detailed answers and the maximum number of characters for an SMS text message. As of now, the answers to queries, has three parts: the answer to the query, the content provider – be it Marie Stopes Foundation or Straight Talk – and a disclaimer stating ‘this is information only’. Hence, adding more information may need a compromise in the details in the answer provided. However, she acknowledged that the suggestion was worth exploring.

Cost or Potential Cost

Students interviewed expressed concern on the pricing of the service after December 2010 when a pricing model will be introduced. The students claimed it cost almost 3 US cents for one query on Google through mobile Internet. They discussed that the cost of using the service should not be more than the cost of using mobile Internet to query for the same information through Google. Further, since mobile phones have limited memory for storing text messages, the students also questioned whether they were going to be charged twice if the same queries were initiated by a unique mobile number.

In response the project manager of the AppLab Project intimated that in order to remain competitive and to be sustainable, the service was going to be priced in consideration to the cost of alternative services like mobile Internet. However, he discussed that there currently no plan to address scenarios of identical queries from a unique mobile number. One of the lecturers suggested that, a weekly report of queries could be emailed automatically to an email address associated to the mobile number to give users a record of their queries and answers. However, this solution has to address non-disclosure policies, since it may require one of the partners to know the complete profile of a user.

Mobile Phone Functions

Concerning the usage of mobile phone functions, 89 percent of users utilize the voice call function. 97 percent use text messaging and 52 percent use the Internet function on their mobile phone. Some respondents shared that “these functions are easy ways to communicate with friends and family, and the mobile phone makes life more convenient”. Other functions used include the calculator, the alarm clock, picture messaging, and voice mail.

Source and Privacy of Health Care Information

57 percent of the respondents claimed to receive their current medical information from a health professional or medical doctor. These respondents attested that medical doctors provide professional health care information. 15 percent receive medical information from familial relations they trust, being their friends or family. One respondent shared that “my friends and family work in the hospital, and I can easily receive professional information from them”.

Moreover, 5 percent of respondents get medical information from the Internet. General responses were “I can find more information from the Internet”. Other respondents mentioned using media sources, as well as the bible, as their source for medical information. 75 percent of the respondents expressed concerns with privacy regarding their health information. One respondent noted that “privacy is important. I do not want other people knowing my personal medical information”.

GSHTA Awareness and Usage

There is significant awareness of Google SMS Health Tips. 60 percent of 136 respondents claimed to have knowledge of Google SMS Health Tips. 52 percent [43 respondents] of those who know about it use it; primarily once a week. These 43 respondents constitute approximately 30 percent of respondents surveyed in the study. 62 percent of those who use GSHTA are male and 38 percent are female.

Concerning preventive health care, 62 percent of GSHTA users use the service to
of the users consider themselves to have better access to healthcare information, thus experiencing an incremental impact. These users also claimed to have gained new knowledge about illnesses/diseases through GSHTA, thus obtaining knowledge which empowered them to make better health care decisions.

Further, we also examined the use or potential use of mobile phones for other health care activities. Out of 146 respondents, 60 percent claimed to have used mobile phones for scheduling and confirming health care appointments; 49 percent claimed to have used mobile phones to call or receive calls concerning post-treatment; and 59 percent considered GSHTA to be useful for urgent health care.

**DISCUSSION AND CONCLUSION**

There tends to be a promise for the use of mobile phones in health care in Uganda. First, we may argue from the findings that, while there is an appreciable awareness of GSHTA among students in tertiary educational institutions involved in the study, awareness does not tend to automatically lead to usage. This may be due to a number of contributory factors including the misconceptions about Google SMS being an Internet-enabled service and the potential cost involved maintaining a mobile phone subscription. In the focus group discussion, the misconception of the name was emphasized. A few other students questioned during the survey also iterated the association of Google SMS with the Internet. More education and/or a marketing strategy with an indigenous branding may be the starting point to address the misconception. Concerning the cost of maintaining a mobile phone subscription, the findings suggest that 65 percent of GSHTA users (43 respondents) tend to either earn less than $100 a month or are unemployed. A majority of the users also tend to be male, who also seem to be earning more income than the female users. Hence, there is an issue of cost and another issue of gender differences in adoption, which may also be indirectly related to the monthly income and weekly mobile expenditure. Males were found to be more likely to purchase their own phones and also tend to have a higher weekly mobile expenditure as compared to females. Further, results from the pilot study point out that users are more likely to continue using GSHTA while it remains free. Measures to reduce the cost of GSHTA post-December 2010 will be highly critical and, more immediately encouraging usage among females is necessary.

Second, findings also suggest evidence in the use of GSHTA for both preventive and curative health care activities - at least 50 percent of users of GSHTA use it for these activities. Non-users also considered it to be useful for urgent health care. Despite this evidence, content relevance in relation to queries and the need to go beyond generic information to more specific content including referrals to health care professionals or facilities, as key challenges which need to be addressed. The study suggested that student young adults tend to source for health care information primarily from health care professionals, and also from familial relations and the Internet. This finding has an implication on health care education and promotion strategies – there is a need to use current intervention strategies to create more access to health care professionals and facilities. In rich interpersonal contexts, as in Sub-Saharan countries, the patterns of communication tend to favor low individualism, high power distance and high collectivism (Hofstede, 1985). People in these countries are more likely to act as group members than individuals, and more comfortable to use something which is being used by the groups they are associated with or recommended by the groups or person of authority. They also consider face-to-face interaction to be essential part of communication and thus, interpersonal or social relationships are more likely to influence technology mediated communication. Technologies which tend to enhance the richness of the communication and interaction will therefore be favored. This argument is iterated by the fact that, 60 percent of respondents claimed to have used mobile phones for scheduling and confirming health care appointments and 49 percent claimed to have used mobile phones to call or receive calls concerning post-treatment. In comparison, GSHTA users constitute only 30 percent of the respondents. We argue that, GSHTA should seek to interface their strategies with current mobile phone usage behavior. The content developers of GSHTA should include referrals to registered health care facilities and professionals; and perhaps, a statement to show the support of the Ministry of Health in Uganda in promotional and marketing materials may also improve confidence and encourage usage.

Concerning policy and practice implications, we applaud this initiative by Google, MTN and Grameen Bank and other local partners, Straight Talk and Maries Stopes Foundation Uganda. Increasing access to health care information is a critical factor in promoting a preventive health care approach. We will encourage the platform to be opened to other mobile operators to increase adoption, where possible (even if it remains as an MTN service), subscribers on other mobile networks should be allowed to access the service at a fee competitive with alternative sources of information. There is also a need to collaborate with local networks of registered health care professionals and health care facilities in order to incorporate referral information in the content of answers to queries. Perhaps, the Ministry of Health in Uganda may be of good help in initiating these partnerships. Further, the project partners should create regular workshops or open forums where they meet different potential users and stakeholders to obtain feedback concerning the use of GSHTA and other Google SMS applications. This could be done both online and offline with an objective of educating and capturing user perceptions and experiences concerning the use of the service. Knowledge from these open forums will inform future marketing strategies and content development.

Using larger population, future research should test the strength of interrelationships between gender, type of queries, monthly income and mobile expenditure. This study focused on students in two educational institutions in Kampala, the capital city; different potential user groups and different communities should be also surveyed to compare the generalisability of findings from this study. This will offer an opportunity to test how other factors such as education levels, age, health status and community/residence (context) affect the use of mobile phones for preventive and curative health care activities.

We argue that this study is no where exhaustive, but has generated fresh insights and new knowledge which can inform future mobile health research, mobile health strategies and policy development.

**References used and Further Reading**


MTN Play allows you to download all sorts of fun stuff to your phone. Games, music, sports and much much more.

To download content:
- Dial *180# and follow menu instructions
- Send key word (NEWS, RUGBY etc) to 180
- Log on to www.mtnplay.co.ug