THE ROLE OF MOBILE PHONES IN EMERGENCY AND DISASTER MANAGEMENT IN KENYA

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DECLARATION

Declaration by the candidate

This is my original work and has not been presented for award of a degree in any other University

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Declaration by the supervisor

This M.A project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This study is dedicated to my mother, Christine Weru, whom I owe a lot of gratitude for always urging me on. I would also like to appreciate my supervisor, Dr. Kiemo Karatu, for helping shape this study through his critique. To all my colleagues and friends whose invaluable support I would not have done without, thank you.

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ABSTRACT

Mobile phone technology is driving not only communication but also increasingly emergency and disaster management. This study explored, from an organizational context, how and why the selected organizations in Kenya were using mobile phones in emergency and disaster management, the challenges of the same and how this use of mobile phones related to social capital.

The study found that there has been a steady integration of mobile phones in emergency and disaster management, through mobile-phone based cash transfers for vulnerable populations, fundraising for emergency kitties and as a means of getting emergency support services to crises populations. From an organizational context, mobile phones are mainly being used in emergency and disaster response.

Among the drivers of the uptake of mobile phones in emergency and disaster management has been their near ubiquitous nature – at least 60 percent of Kenyans have access to one. Falling handset costs and increased mobile phone functionality has further strengthened the technology's appeal with the convenience and security offered by mobile phone-based cash transfers for example, boosting the technology's use in emergency and disaster response.

The spin-off benefits of using mobile phone technologies include social capital aspects such as feelings of empowerment due to the ability to communicate and access much needed help. Among the challenges identified in the use of mobile phones in emergency and disaster management in Kenya include the high start-up costs due to technology and training needs, poor mobile network connectivity in remote areas, illiteracy, reluctance to embrace the mediation of the technology in aid delivery and the misuse of mobile phones.

The study recommends research into more proactive uses of mobile phones in disaster management in Kenya as the technology is predominantly being used in enhancing emergency and disaster response. There are opportunities for the use of mobile phone technology in early warning, preparedness and other mitigation activities that can help Kenya to build resilience in the face of the ever growing threat of emergencies and disasters.

Contents

CHAPTER ONE

INTRODUCTION

1.1 Background

Disasters disrupt national economies and severely weaken the poor and vulnerable and are recognized as major impediments to poverty reduction. Africa has the highest mortality-related vulnerability coefficients for droughts with drought and floods accounting for 80 percent of loss of life and 70 percent of natural hazards linked economic losses.[1] With such disasters increasing across the Sub-Saharan Africa region, there is a need for more innovative approaches to deal with the emerging threats, whose impact is worse for those living in remote and isolated areas.

With disaster mitigation requiring timely dissemination of authoritative information before, during, and after disasters, as the International Telecommunication Union (ITU) notes, mobile phones are fast emerging as being so much more than just communication tools, they are increasingly being used to transfer much needed cash, for example, to vulnerable communities caught up in emergency situations. Mobile phone technology has evolved from an expensive gadget, mainly for business use, to a more commonplace and affordable device used by almost everyone. It is in view of this that those involved in emergency humanitarian and development activities, while seeking innovative ways of reaching those they serve, are turning to mobile communications networks.

The mobile phone is becoming critical in defining the response to the ever prevalent and diverse humanitarian crises.

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[1] Regional Emergency Preparedness & Response Framework, Great Lakes and Horn of Africa, A report to the Regional Humanitarian Partnership Team, January 2008.

The proliferation of cheaper mobile phones and the lowering costs of network connections have also seen the technology increasingly being integrated by international aid and national relief organizations within the emergency and disaster management cycle. Mobile phones have become crucial to finding solutions to key health, social, environmental, and development challenges. Mobile phones can connect families separated by disaster, help emergency relief workers respond more quickly, empower farmers to diagnose crop diseases and ask for better prices in markets, and help track the changing weather and so much more.[2]

The increase in the number of mobile cellular subscriptions over the last five years has defied all predictions and Africa remains the region with the highest mobile growth rate. By the end of 2008, Africa had 246 million mobile subscriptions and mobile penetration had risen from just five per cent in 2003 to well over 30 percent. [3] "Between 2003 and 2008, Africa's number of mobile cellular subscriptions grew twice as fast as that of the world," states the 2009 Information Society Statistical Profiles for Africa report. The high ratio of mobile cellular subscriptions to fixed telephone lines and the high mobile cellular growth rate suggest that Africa has taken the lead in the shift from fixed to mobile telephony, a trend that can be observed worldwide.

"Between 1998 and 2008, Africa added only 2.4 million fixed telephone lines, less than 1 percent of the telephone lines added globally in the same period." ITU estimated in 2006 that there were four billon mobile and fixed phones in use around the world. Of these, 61 percent are first time subscribers from developing countries. [4]Kenya too is experiencing a dramatic increase in mobile phone usage[5] with the subscriber numbers rising since the liberalization of the telecommunication sector in the late 1990s.

There are a myriad unseen ways in which mobile phones are improving people's lives across the world and in the developing world in particular. Mobile phones have become a key networking tool and already, a number of NGOs as well as governments, are piloting mobile phones as tools in emergency and disaster interventions.

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[2]IRIN: Helping farmers at the touch of a button - http://www.irinnews.org/Report.aspx?ReportId=83805
[3]Information Society Statistical Profiles 2009 Africahttp://www.itu.int/ITU-D/ict/material/ISSP09-AFR_final-en.pdf
[4] International Telecommunication Union 2007
[5]Communications Commission of Kenya

According to Coyle D. (2005), "in the case of developing countries in particular, mobiles are likely to be the dominant means of communication for [disaster] affected members of the public."

"This flow of information – not mediated by broadcasting agencies or public authorities – ensures that people elsewhere quickly come to know what is happening and what help is needed. In the chaotic aftermath of a disaster, when people are displaced, buildings and infrastructure destroyed, no central authority can possibly hold all the necessary information and allocate resources in the place of greatest need."[6]

Hand-held mobile devices can serve as tools to enable refugees and internally displaced persons (IDPs) to generate a more compelling response and to tell their own stories, according to a 2007 report by the Brookings Institution[7]. Forgotten emergencies can also be brought into the limelight as, "…at any given time, there are hundreds of conflicts in the world and the way they are reported determines whether there will be any response to them".

It is however worth noting that mobile phones allow both true and false information to be rapidly communicated from sources in real time thus enabling and detracting from emergency response. Also while industrial media is held to account to society for the content and consequences of its activities, social media, and specifically mobile phones for the purposes of this study, are so far not as accountable for their publishing activities.

In Kenya, media regulation has not been adapted to the latest advances in technology and special consideration must be given to the role of Short Message Services (SMS) in spreading rumours. If necessary, policies on monitoring originators of messages of incitement should be considered and discussed with private companies.[8]

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[6]Coyle, Diana/Enlightenment Economics. The Role of Mobiles in Disasters and Emergencies (London, UK: GSM Association, 2005).

[7]Reporting crises – how the media, relief agencies and the government determine humanitarian response. Synthesis report, The Brookings Institution 24 May 2007

[8]The Role of the Media in the Upcoming Somaliland Elections: Lessons from Kenya
http://pcmlp.socleg.ox.ac.uk/sites/pcmlp.socleg.ox.ac.uk/files/Role%20of%20the%20Media%20in%20Somalila nd%2mElections-11_0.pdf

Recently, a number of people in Kenya have successfully been prosecuted after being found guilty of sending malicious or hate texts. In October 2012, the Communications Commission of Kenya announced that political campaign text messages will be vetted before being broadcasted to the public to avoid the spread of hate messages that could foment tension ahead of the 2013 general elections.

1.2 Why mobile phones in emergency and disaster management in Kenya?

While mobile phones are used in diverse situations, from calling to say hallo, to booking an appointment or cancelling it, ordering pizza or paying bills, among other examples, there are great opportunities for the technology's use in emergency and disaster management too. A number of factors especially favour the integration of mobile phone technology into emergency and disaster management in Kenya.

High mobile phone uptake: As noted, Kenya is enjoying a dramatic increase in mobile phone usage[9] with the subscriber numbers rising since the liberalization of the country's telecommunication sector in the late 1990s. Cheaper mobile phone handset costs have meant that more people in Kenya than not have access to the devices; the 2009 census put this number at about 60 percent. This makes mobile phone apps convenient and accessible.

The large number of mobile phones in Kenyans hands has already been embraced by the business community for the opportunity it offers in reaching a wide market fast and effectively, the same can also be true for emergency and disaster practitioners wanting to reach this segment of the population with information and support to help to reduce avoidable losses to disasters.

Innovation hub: Kenya is the home of the widely successful M-PESA mobile phone-based cash transfer service that has revolutionized how money changes hands. The service has also been expanded regionally with other countries using the M-PESA example to develop their own mobile phone based cash transfer systems. The uptake of the M-PESA service in Kenya has been driven by among other factors a large cash-based economy, a gap in banking services and the availability of the mobile phone devices.

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[9]Communications Commission of Kenya

M-PESA processes more transactions domestically within Kenya than Western Union does globally and provides mobile banking facilities to more than 70 percent of the country's adult population, states an October 2011 International Monetary Fund report.

The same opportunities for innovation lie within the emergency and disaster management sector. For example, a solution to the lack of timely access to information before, during and after disasters may lie in the integration of such mobile phone systems as part of Kenya's regular emergency preparation programmes.

At present, a mobile phone app called M-Farm, created by 25-year-old Susan Oguya is helping small-scale farmers in Kenya to find markets for their produce sustaining their livelihoods, notes an 11 October BBC report, entitled, 'How much will technology boom change Kenya?' Using M-Farm, a farmer can find out the latest prices via text message. Charles Mbatha, one of the apps beneficiaries, told the BBC that, "[M-Farm] is a new thing for me. I am happy that we can sell through phones. Because now I know I can plant something, and I know, at the end of it I will have something [back.]" M-Farm is a low-tech app that relies on text messaging. As camera-phones become more widespread, innovator Oguya plans to expand the app to allow farmers to upload photos of their produce.

Demographics: Kenya also enjoys a large youth population, whose lives are already mediated by mobile phone-based technologies be it for keeping in touch, staying updated, listening to music or reading books online, among other examples. These youth are driving innovation too, as noted above, finding solutions to everyday Kenyan problems. In Nairobi, "tech-incubators" are springing up places designed to give young IT entrepreneurs the space - and sometimes a bit of cash - to develop their ideas, adds the BBC report.

Kenya's Permanent Secretary in the Ministry for Information and Communication, Bitange Ndemo states in the report: "[There is] a new industrial revolution that is coming in this digital age. We in the third world, we have so much youth. We can leverage on that and be able to leapfrog the economy, instead of going through the same steps that most countries went through."

The cost of disasters: According to the 2012 World Disasters Report, 2011 was the most expensive of the past decade in terms of disaster costs. In all, 336 disaster events cost countries 365.5 billion US dollars. More than half of these costs were registered in Japan where the March 2011 earthquake and tsunami caused 210 billion US dollars in damages.

Kenya, as the rest of the Sub-Saharan Africa region, is also exposed to huge disaster losses stemming from man-made and natural causes. Perennial livestock deaths due to drought for example, are common with food crops also being damaged by harsh weather and diseases. These crises and others are opportunities to innovate to bridge the gap between vulnerable populations and those who can assist with more severe disasters projected amid a changing climate. Safe and resilient communities are knowledgeable about how to access services and resources.

1.3 Statement of the Problem

Many Kenyans are exposed to a wide range of hazards in the natural or man-made environment that adversely affect their lives and property. These range from drought to perennial flooding, as is the case in the low-lying western region of Budalangi, to epidemics and pandemics such as cholera and HIV/AIDS. Sporadic ethnically and politically motivated conflicts are also common, such as the 2007 post-election violence during which hundreds died, and thousands ended up in internal displacement camps cut off from their livelihood sources.

Crop and livestock diseases are also a big problem for farmers who often end up incurring huge losses yet a majority of Kenyans rely on agriculture either directly or indirectly for a livelihood.

Mobile phone communication is playing an increasingly important role during the various phases of a humanitarian catastrophe – from the early warning phase through to the immediate disaster response and longer term reconstruction efforts. Kinkade and Verclas (2008)[10].

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[10]Kinkade, S and Verclas, K. Wireless Technology for Social Change. Washington, DC and Berkshire, UK: UN Foundation–Vodafone GroupFoundation Partnership, 2008
http://mobileactive.org/files/MobilizingSocialChange_full.pdf

For instance in Kenya, at the height of the post-election violence in early 2008, mobile phones were used to avert a further loss of life and damage to property. Human rights advocates set up a text messaging centre that served as a vital tool in conflict management and prevention. The centre provided a hub for real-time information about actual and planned attacks between rival ethnic groups, Kinkade and Verclas (2008). Text messages received at the centre were relayed to local peace committees for response. Funded by Oxfam-Great Britain, a deal was also negotiated with the Celtel phone company [now Airtel] to halve its ordinary rates for those transmitting and receiving messages through the text message centre.

The outcome was that it was possible to avert conflict through mobile phone communication. "When one local citizen learned of a pending attack against a camp for internally displaced people, a text alert was sent to the message centre, which in turn alerted the peace committees in Eldoret [which alerted necessary authorities to prevent attacks]…"

The photo above, by IRIN News, shows a camp for internally displaced persons (IDP) in Kenya's Rift Valley Province, which was the epicentre of the 2007 post-election violence. The violence left at least 1,000 people dead - tens of thousands of others were forced from their homes into often squalid IDP camps.

In 2011, mobile phones were used to mobilize support for thousands of Kenyans facing food insecurity through the Kenyans for Kenya initiative. The campaign aimed to raise 500 million shillings - about US$5.28 million - in one month; that target was reached in 10 days. To donate, mobile phone users were provided with a pay-bill number that they could send money too from as low as 10 shillings (about 10 US cents).

In late August 2012, 50 fishermen who were trapped for days in Lake Victoria, after water hyacinth weeds blocked their sailing routes, were eventually rescued by helicopter after one of the stranded fishermen, who could be reached by mobile phone, explained their predicament. The fisherman told the 31 August Kenya Daily Nation newspaper that apart from fears of being attacked by snakes, most of them were being attacked by mosquitoes and other insects at night. He also indicated that most of the trapped fishermen were relying on the raw fish they had caught for food and drinking heavily polluted water.

As illustrated, mobile phone technology can help to enhance the emergency and disaster management experience but few organizations in Kenya have integrated the technologies into their day to day emergency management programmes with a majority of those that have used the technologies embracing them as short-term pilot initiatives. Among the factors that have contributed to this include the prohibitive costs of setting up such projects and attitudes to mobile phone usage beyond the traditional communication role. Other challenges include literacy; the mobile phone SMS platform in Kenya for example, broadcasts only in the English and Kiswahili languages.

The various ways in which mobile phones are being used by organizations in emergency and disaster management in Kenya and the reasons behind these uses as well as the challenges and the social capital effects has not been captured; this study attempted to fill this gap.

To aid the study, the following sub-questions were proposed:

1) Which kinds of organizations are using mobile phones in emergency and disaster management in Kenya?
2) In what kinds of emergency and disaster situations are the organizations using mobile phones?
3) What are the reasons for the adoption of mobile phones in emergency and disaster management?
4) What are the operational and socio-cultural challenges the organizations are facing in the use of mobile phones in emergency and disaster management?
5) What are the social capital effects of using mobile phones in emergency and disaster management?

1.4 Objectives of the Study

1.4.1 Broad Objective

The overall aim of the study was to explore from the context of selected organizations in Kenya: How and why mobile phones were being used in emergency and disaster management and what the organizational challenges were in this use of mobile phones.

1.4.2 Specific Objectives

The objectives of the study were:

1) To examine the forms of usage of mobile phones in emergency and disaster management in Kenya.
2) To find out the reasons for the adoption of mobile phones in emergency and disaster management in Kenya.
3) To find out the operational and socio-cultural challenges in integrating mobile phones in emergency and disaster management in Kenya.
4) To find out the social capital effects of integrating mobile phones in emergency and disaster management in Kenya.

1.5 Scope of the Study and Limitations

The research study covered Kenya, in general, although one of the case studies specifically covered the Keiyo area, in the Rift Valley region. The study was conducted between January and June 2011.

The study sites were the offices of the key organizations; the Kenya Red Cross Society, the National Disaster Operations Centre, the Kenyan Chapter of the Freedom From Fistula Foundation and Concern Worldwide, all of which are located in Nairobi, Kenya.

The four organizations, the Kenya Red Cross Society, the National Disaster Operations Centre, the Kenyan Chapter of the Freedom From Fistula Foundation and Concern Worldwide, were purposively and conveniently selected for the purposes of this study.

Four key officials of the same organizations comprised the key informants for the in-depth interviews.

The key criterion of selection for the organizations was past or present use of mobile phone technology in emergency and disaster management in Kenya. The key informants were also selected conveniently and purposively based on their ability to respond to the study questions, their availability and their organizational functions.

The key organization informants helped to answer the research questions which were: to find out the forms of usage of mobile phones by organizations working in emergency and disaster management in Kenya; to examine the reasons for the adoption of mobile phone technology by organizations working in emergency and disaster management in Kenya; to describe the organizational operational and socio-cultural challenges in integrating mobile phone in emergency and disaster management in Kenya; and to investigate the social capital effects observed by organizations in Kenya as a result of integrating mobile phone technology into their emergency and disaster management activities.

The study utilized both primary and secondary data collection techniques and sources. These included: Face to face interviews with key informants, a semi-structured interview schedule, and photography and beneficiary testimonials where possible to enrich the study. The secondary data sources used in the study included: organizational reports and websites, evaluations, and news stories.

The results of the study may not be generalized as four organizations were selected as case studies. However, this was done as the research was exploratory and descriptive to allow for the gathering of initial qualitative data on the role of mobile phone technology among organizations involved in emergency and disaster management in Kenya.

Acknowledging that a beneficiary perspective on the role of mobile phones in emergency and disaster management in Kenya would have also been beneficial, the study opted for the organizational perspective to answer the research questions due to the pilot nature of most projects integrating mobile phone technology in their emergency and disaster management activities in Kenya. The case studies selected for study also did not lend themselves to beneficiary investigation due to the amorphous nature of the organizations beneficiaries.

1.6 Definition of Terms

Disaster – a serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community to cope using its own means.

Disaster risk management – the systematic process of using administrative decisions, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. It comprises prevention, mitigation and preparedness.

Emergency - An emergency is any unplanned event that can cause death or significant injuries or environmental damage.

Emergency Management - the organization and management of resources and responsibilities for dealing with emergency preparedness, response and rehabilitation

Fistula – is an abnormal hole between the bladder or rectum and the vagina, resulting from prolonged and obstructed labour. A woman with fistula leaks of urine and/or stool.

Hazard – a potentially damaging physical event, phenomenon or human activity which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Information Society - a society in which the creation, distribution, and manipulation of information has become the most significant economic and cultural activity.

Mitigation – structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Preparedness – Pre-disaster activities that are undertaken within the context of disaster risk management. This includes the development/enhancement of an overall preparedness strategy, policy, institutional structure, warning and forecasting capabilities, being alert to hazards and taking appropriate action in the face of a threat or actual disaster.

11

Resilience – the capacity of a system, community or society to resist or change in order that it may obtain an acceptable level in function and structure. This is determined by the degree to which the social system is capable of organizing itself and the ability to increase its capacity for learning and adaptation, including the capacity to recovery from a disaster.

Risk – the probability of harmful consequences or expected loss of lives, people injured, property, livelihoods, economic activity disrupted or environment damaged resulting from interaction between natural or human induced hazards and vulnerable/capable conditions.

Risk assessment – a process to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.

Social capital – refers to the institutions, relationships and norms that shape the quality and quantity of a society's social interactions. Social capital is not just the sum of the institutions which underpin a society; it is the glue that holds them together.

Social media - information content created by people using highly accessible and scalable publishing technologies that are intended to facilitate communications, influence and interaction with peers and with public audiences, typically via the internet.

Social protection - protective public actions by the state and others in response to unacceptable levels of vulnerability and poverty, and which seek to guarantee relief from destitution for those sections of the population.

Vulnerability – a set of conditions and processes resulting from physical, social, economic and environmental factors which increase the susceptibility of a community to the impact of hazards.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This chapter is a review of the issues around the use of mobile phones in emergency and disaster situations and ties this in with the concept of social capital.

2.1 Introduction

Mobile phones have improved communications for those involved in disaster, aid and allied voluntary services in remote areas, which are often the most affected by disasters stemming from natural hazards. The proliferation of the mobile phone in the Kenyan context for instance, where more households than not have access to one means that communication is no longer that much of a problem today. The convenience, low cost adoption and new innovative marketing strategies are making mobile phones a technology easily accepted by low-income households. Wood (1996)[11] notes that most NGO workers express a preference for voice communications; using the phone as it gives two way 'live-as-it-happens' conversations. Through the phone, problems can be discussed and many alternative ideas brain-stormed in one conversation. It also has the advantage that the caller has the psychological assurance that the person he wanted has heard and understood the meaning of the message.

Text messages, available via mobile phones too, render themselves useful in that they are much cheaper than voice calls and language problems can easily be overcome as a text message may be handed over to someone more competent for translation, giving the addressee more confidence in his understanding of the meaning. Text messaging is also gaining more utility in the area of fundraising for NGO work as will be described later in the study.

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[11] Wood. M. (June 1996) Disaster Communication Part 1. Global. First Edition, G4HLZ Disaster Relief Communications Foundation.

The lack of human contact in text-messaging however makes it less reassuring than the phone. Also, some people are reluctant to send particularly important messages by text due to a lack of confidence in the system. "When you make a phone call, you can hear a voice you know saying, yes, I see....."

The mobile phone minimizes the cost to travel to communicate with out of town relatives. [12] Individuals are also able to rapidly communicate with worried family members during disasters through of the mobile phone, which has also proved successful in mitigating shocks and costs among the poor. Mobile phones do not require a high level of literacy and are thus a simple entry pathway to technology for the poor. Low mobile phone handset prices as well as lower barriers of entry (such as cost and skill) have all contributed to the phenomenal uptake of mobile phones by developing countries.

In Kenya, the introduction of innovative products catering to the lower income market has helped boost the adoption of gadget even among poorer households. The Safaricom network for instance, has the 'Okoa Jahazi' credit advance service, which allows customers to request a Kshs. 50.00 airtime advance once every week repayable within 72 hours from time of request. Through value addition services such as the mobile phone pay bill product, customers are able to pay or deposit money into other organizations' mobile phone accounts, a utility increasingly being exploited as a disaster fundraising tool. Currently, electricity customers can settle their Kenya Power and Lighting Company (KPLC) bills by making deposits via their mobile phones. Other companies are following suit as newer innovations for the mobile phone daily emerge.

A 2008 UN Foundation and Vodacom study of NGOs' use of mobile technology found it to be very widespread and indispensable with eighty-six percent of NGO employees surveyed using mobile technology in their work.10 According to the study, "NGO representatives working on projects in Africa or Asia are more likely to be mobile technology users than their colleagues in areas with more 'wired' infrastructures".

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[12] Diga, K (2007) Mobile Cell Phones and Poverty Reduction: Technology Spending Patterns and Poverty Level changes among households in Uganda

14

The study found 99 percent of technology users characterized the impact of mobile technology as positive with nearly a quarter describing it as "revolutionary" and another 31 percent saying it would be difficult to do their jobs without it.

NGO experience with mobile phones	Total (%)
It has completely revolutionized the way my organization or project does its work	25
It would have been very difficult to do the work without it	31
It is/was very helpful for my organization or project	36
It is/was only somewhat helpful	8
Ultimately, it is/was more of a burden than a help	0
It was a waste of time and money	0

Source: Wireless Technology for social change

2.2 The forms of usage of mobile phones in emergency and disaster management

Increasingly, mobile phones are being used in emergency and at the early warning, preparedness, mitigation, response and recovery phases of disaster management. The mobile phone is especially popular in interventions aimed at improving public health.

In 2009, the United Nations' Department of Economic and Social Affairs and Uganda's Ministry of Health launched a "Texting4Health," 10-day pilot health initiative using mobile phones to spread important health information. MTN mobile phone company users responded with the correct answers to health-related questions to win airtime.[13]

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[13] mHealth launched in Uganda http://www.digiactive.org/2009/07/02/mhealth-launched-in-uganda/

In response to a question such as "Are children under five and pregnant women most susceptible to malaria?" recipients received additional information. According to researchers, texting is the only viable interactive channel for reaching people on a mass scale around the world. [14] A similar initiative was launched in June 2009, by the UN Children's Fund and the Republic of Congo government to reduce child mortality. About 125 of every 1,000 children in Congo die before their fifth birthday, with half of this number not making it to the age of one. In eight out of 10 cases, easily curable conditions - malaria, diarrhoea, respiratory infections, and malnutrition - are to blame. [15] By dialing 115 from their mobile phones, residents are now able to talk for free to professional health operators.

Mobile technology is also revolutionizing the way contagious diseases are monitored in sub-Saharan Africa. In Kenya, the number of Somali asylum seekers crossing the border into the country has increased in the recent past and with it, the threat of previously eradicated vaccine-preventable diseases has re-emerged. In early 2009, a mobile phone based health application, EpiSurveyor, helped to investigate and contain an imported polio outbreak that threatened thousands in East Africa. Health officials in Kenya used the application, which can be downloaded onto handheld devices to log patients' symptoms and any treatment they received, after the introduction of the first case of polio in Kenya in 20 years by the fleeing Somali refugees.[16] Kenyan health workers modified the survey forms used by EpiSurveyor to track an emergency vaccination campaign and managed to stop a potential epidemic in its tracks. The success of the Kenyan trial encouraged expansion into more African countries.

The not-for profit Grameen Foundation has also piloted mobile devices in the detection and control of crop diseases. By using mobile phones equipped with Global Positioning Systems and cameras. "A trained community worker can input the location coordinates, take a photo of the diseased crop, send it to our database, from which we would forward the image for expert review and feedback." Whitney Gantt, a Grameen project officer told IRIN. "In addition to being able to identify a disease, people will know what to do." In the seven-month pilot project in two Ugandan districts, community workers collected and disseminated information on crop acreage and projected harvests through mobile device surveys. [17]

[14] Texting 4 Health @ StanfordUniversityhttp://www.texting4health.org/
[15] IRIN News: Dial 115 and save a child's life http://www.irinnews.org/Report.aspx?ReportId=84798
[16] BBC News [http://news.bbc.co.uk/2/hi/technology/7619473.stm
[17] IRIN: Helping farmers at the touch of a buttonhttp://www.irinnews.org/Report.aspx?ReportId=83805

In the scheme, community knowledge workers (CKWs), selected from existing farmers' groups, are trained in using mobile devices for data collection. Each has a mobile phone, some of which are equipped with cameras. From a menu on the phones, the CKWs enter the required data, which is then transmitted to Grameen's database for agricultural forecasting. Phone cost range from US$30-330 each. From the information collected, Grameen hoped to link farmers with buyers and in the main local languages too in the future via their mobile phones. According to researchers, location-specific information on soils and the best crops, appropriate farming techniques and warning on droughts, floods, diseases and pests, as well as up-to-date market and price information, would not only maximize crop yields and market access but also improve livelihoods and reduce uncertainties in food production.

2.3 The reasons for the adoption of mobile phones in emergency and disaster management

Mobile phones are being used by established disaster management practitioners to enable more than just communication with others in far-flung places. They provide instant reach and are capable of enabling virtually instantaneous responses.

The rapid uptake of mobile phones has to a large extent been driven by lower handset and calling costs bolstered by the emergence of leading telecoms equipment makers in the developing world; notably China and India, and the trend of new phone-based services such as mobile phone-based crop advice, money transfer and healthcare. The reason why mobile phones are so valuable in developing countries such as Kenya is that for many, they are providing access to telecommunications for the very first time. The now-ubiquitous mobile phones can help build more knowledgeable, resilient communities. According to Ruohtula (1999)[18], the challenge of individuals in the Information Society is to transform the mass of information available into knowledge.

Historically, disaster management in Kenya was not viewed as an integral part of development planning but this is changing with greater recognition of the importance of reducing the impacts of natural and manmade disasters, planning, preparation and ever-improved resilience, notes Onywere (2005).

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[18]Wireless Communications in the Information Society, M.Sc. Thesis - University of Helsinki, SamppaRuohtula, 1999http://www.acoustics.hut.fi/publications/files/theses/ruohtula_mst.pdf

The mobile phone provides a pro-active approach to emergency and disaster management as is illustrated in the context of HIV awareness creation and election monitoring. According to research, adult HIV prevalence in East Africa exceeds six percent in Uganda, Kenya and Tanzania. Whatever the statistics, the challenge lies in carrying out effective HIV prevention campaigns to maintain low prevalence rates and provide treatment, care and support to populations already affected by the disease.[19]

In Uganda, policy makers are looking for innovative ways of educating people about the virus. The rapid growth of mobile phone technology has provided an avenue that could potentially reach millions with prevention messages. Text to Change (TTC), an NGO that uses a bulk short message service platform for HIV/AIDS education, partnered with the AIDS Information Centre in Uganda and Celtel, now Airtel, to communicating HIV information. TTC launched the eight-week pilot programme on 14 February 2009, targeting 15.000 Celtel subscribers in Mbarara District with the slogan, "Don't guess the answers, learn the truth about AIDS". [20] A question was sent each week; if the recipient answered correctly, a confirmation SMS was sent, and if he or she answered incorrectly, a rectifying message was sent. Questions included: "What is the difference between HIV and AIDS?", "How is HIV transmitted?" among others.

With the holding of elections in most African countries more often than not heralding periods of intense anxiety over the acceptance of poll results and possible violence, mobile phones are increasingly being used for election monitoring in countries like Nigeria and Kenya.

Mobile phones also provide a technology that is proving invaluable in the gathering of disaster data. The University of Cape Town, South Africa, operates a disaster information management system, which focuses on documenting the incidence of small, recurrent and localized disaster incidents that are often not covered internationally but have serious effects on marginalized communities.[21] Such information is best provided by locals who have firsthand experience of the happenings.

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[19]Regional Emergency Preparedness & Response Framework, Great Lakes and Horn of Africa, A report to the Regional Humanitarian Partnership Team, January 2008
[20]IRIN/PLUSNEWS Using mobile phones to fight HIV http://www.plusnews.org/Report.aspx?ReportId=80176
[21]Bhavnani, R. Vordzorgbe, S. Owor, M. &Bousquet, F. (2008) Report on the status of disaster risk reduction in the sub-Saharan Africa region

The University organizes information in user-friendly formats that allow data query and generation of additional information on patterns and trends. This helps planners and residents to consider disaster more strategically. This has also improved access to previously unreported disasters and created more readily understood concepts of hazards, vulnerability and risk. Using their mobile phones, community members can take photos of disaster damage and record the experience for future reference.

With rapid mobile phone penetration in many areas of the globe and growing mobile network coverage, access is increasingly assured. Mobile phones often require low literacy requirements making the device easy to use for most people. This feature is invaluable when trying to reach disaster affected communities most of whom, in the case of natural disasters, are in the rural areas and have varying degrees of literacy.

Mobile initiatives provide greater opportunities for social impact than other information and communications technology (ICT) projects, say Kinkade and Verclas (2008). For example, physical access to mobile phones is obviously much greater compared to computers and other less readily available technologies.

In order for mobile solutions to have impact, they need to be appropriate to their environment, and be responsive to local needs and conditions. Thus, beneficiaries need to be involved in the planning and design of mobile systems and they need incentives (such as increased efficiency or time savings) to use the technology.

2.4 The operational and socio-cultural challenges in integrating mobile phones in emergency and disaster management

Increasingly, emergency and disaster management practitioners are integrating mobile phone technology into their activities. However, there are various key operational and social-cultural challenges in the same:

Lack of diffusion: According to the 2009 ALNAP report, it is at the diffusion stage that most innovations in mobile phone use with regard to humanitarian work and disaster management are challenged.

"Innovation is happening daily on the ground. It is not the imagination that is the problem; the problem is institutional. "You need to sustain the growth of the 'eureka moment' and allow it to live."[22] According to the report, mobile technology application also more often than not remains at the preliminary stages, mostly used in short-term pilot project situations.

The report[23] further notes that fear of failure remains high in the humanitarian sector: "A high-pressured, rapidly changing field operation, often in insecure and dangerous conditions, does not leave much space for trying out 'new and exciting ideas".

Complexity: The skills and training necessary to implement mobile phone-based interventions are also a challenge. This is because as advances are made possible through mobile technology, so does the need for the creation of more sophisticated back-end systems. For example, while mobile technology is facilitating data collection, back-end systems capable of aggregating and analyzing the new data are also required. Systems are complex and multi-faceted and interventions in one area may require investments in others creating additional costs. Ensuring accurate data is also a challenge.

High Costs: Kinkade and Verclas (2008), note that in the deployment of mobile technologies in humanitarian work, sharing information and technical exchanges between organizations is vital to reduce the amount of time it takes to launch a solution and reduce the associated costs. "More needs to be done to overcome the 'innovation silos' some organizations operate in, where advances and knowledge gained in the use of mobile technology do not necessarily transfer across organizational boundaries," they say.

ALNAP's 2009 report states that "Such approaches become especially vital for the most radical innovations, which focus on affected communities, local partnerships and disaster prevention."

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[22] IRIN: Innovation in aid sector needs 'room for risk' http://www.irinnews.org/Report.aspx?ReportId=85656 – accessed on 10 August 2009

[23] ALNAP 8th Review of Humanitarian Action Performance, Impact and Innovation July 2009 - http://www.alnap.org/initiatives/current/rha/8.aspx

Sustainability: Identifying potential win-win solutions for businesses and non-profit organizations holds promise for expanding and sustaining the impact of such initiatives in the future, this is because for most NGOs, the costs of developing and deploying mobile technologies are often onerous. Many projects also rely on heavily subsidized technology or transmissions or even direct donations by technology companies and mobile operators, which are unlikely to be sustainable if initiatives are scaled. In most of the projects, the NGOs involved also have to meet the cost of helping beneficiaries to access mobile phones.

Poor infrastructure: Network connectivity and a lack of electricity in rural parts are a problem and can delay information transmission. The inadequate electricity supply has however to some extent spurred positive innovations such as the bicycle charger and the solar mobile phone. Greater mobile-driven benefits will only be reached if access can be extended further and mobile operators find new ways to cut the cost of phone ownership even more, say analysts.

Illiteracy: The Ugandan pilot TTC pilot, described before, found that more people would have responded to the HIV/AIDS awareness questions if these were in local languages. Better awareness of the campaign would have also helped reach more people with hopefully greater impact. In some pilots too, impact can be affected in cases where some segments of the population, for example women, are not reached due to lower literacy levels. Most phone owners are also men. Conversely, some of the pilot projects have specifically targeted women providing them with mobile phones and contributed towards their empowerment.

2.5 The social capital effects of integrating mobile phones in emergency and disaster management

In a disaster situation, communication with loved ones enables survivors to cope better. Also, learning more about people who have been in disaster situations helps narrow the gap and increases empathy by making the hazard not appear as remote as there are real faces to the disaster, says Perez-Lugo (2004)[24]. The concept of social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions.

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[24]Perez-Lugo, Marla (2004) Media uses in disaster situations: A new focus on the impact phase... Sociological Inquiry, Vol. 74, No. 2, May 2004, 210-225

During the preparedness stage, mobile phones and other social media tools such as the radio and television can provide information about the approaching hazard and tips to immediately prepare for its impact. During the response and recovery phases, the general media attention is on the 'most affected' areas providing estimates of damages and losses. During the long-term mitigation phase, the media are considered a disaster information provider through coverage of non-local disasters (via news and special programmes), which supposedly help the community to raise disaster awareness and prepare for future events. Therefore, Perez-Lugo says, even when the content of the transmission changes, the media are still perceived to serve a didactic function because it is assumed people keep watching, reading, and listening to obtain information on hazard preparedness, response and recovery.[25]

Although the media in the sociology of disasters are mainly viewed as management tools used to influence people's preparedness and response to natural disasters, they also have latent functions in disasters which include emotional support and companionship. They help isolated individuals feel connected with the 'outside world'.

The audience–media relationship remains across the disaster phases but its role changes. The relationship fulfills more functions than strictly the supply of information. For example, the crisis in the contested Gaza strip in the Middle East in January 2009 left residents increasingly in need of psycho-social support. Despite severe damage to the telephone network - both land lines and the mobile phone – it remained possible, for residents to dial 121 from a Jawal (Palestinian mobile phone Company) phone and access toll-free crisis hotlines. Sami (not his real name), a 13-year-old, called for support after he witnessed his three friends die. Social worker Abed Rahhal, 28, told IRIN[26]: "We do our best to listen. About 70 percent of the callers are children and most children tell me they are afraid to die."

Text messaging has also been used in Iraq, by the UN World Food Programme, to inform thousands of food aid beneficiaries of when food was ready for pick up. "...People reported that they felt happy when they received the text messages...they felt that someone cares about them." Kinkade and Verclas (2008)10.

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[25] Quarantelli, E.L. 1996. "The future is Not the Past Repeated: Projecting Disasters in the 21st Century from Current Trends." Journal of Contingencies and Crisis Management 4 (4): 200-40
[26] IRIN: Hotlines support Gaza residentshttp://www.irinnews.org/Report.aspx?ReportId=82377

Telecoms Sans Frontieres, TSF, an NGO based in France uses mobile telecommunication to help re-establish vital communication networks in the response to and management of humanitarian crises. TSF is looking into ways of setting up 'cyber cafes' in relief areas that would enable affected individuals to send e-mails to family and friends about their situation and needs.

In the case of mobile telephony in developing countries, social capital can be created through exchanges of voice and or data, which strengthen existing social networks or help, forge new ones. It is created as individuals communicate more freely across greater distances and with greater frequency such as migrant workers calling family and friends back home, Sinha (2005)[27].

Kenyan mobile networks have also introduced airtime sharing services. Known as the 'sambaza' service on Vodacom's Safaricom network, pre-paid subscribers are able to share airtime amounts with their family and friends ranging from between Kshs. 50 to Kshs. 10,000. [28] This sharing serves a useful social function.

While analyzing the positive and negative effects of mobile phones on social networks and the creation of social capital, Sinha says, "Beeping or flashing, which occurs when a caller dials but hangs up before the call is connected, is an innovative way some mobile users are virtually and affordably, 'tapping someone on the shoulder'."

According to Goodman (2005), social capital may even be more important for developing countries as residents have less access to formalized support structures and may rely on informal networks, which mobile phones to a large extent help nurture, instead.

2.6 Theoretical Framework

This study borrows from the social capital and diffusion theories and ties these in with the rational choice and social exchange theories.

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[27] Effect of Mobile Telephony on Empowering Rural Communities in Developing CountriesInternational Research Foundation for Development (IRFD) Conference on Digital Divide,Global Development and the Information Society, November 14-16, 2005
[28] Safaricom http://www.safaricom.co.ke/index.php?id=300

Studies on alternative uses of media, in this case social media tools such as mobile phones, suggest that they can be actors, instead of mediators in social interactions. When addressing the role of media, research often assumes they are crucial management tools just because of their ability to efficiently and quickly transmit information about the hazard, preparedness and recovery stages to a wide and heterogeneous population - such as using mobile phones to alert an at-risk population of an oncoming hazard. However, Perez-Lugo (2004) notes that the media, apart from transmitting information, also have a linkage and social utility function.

Social utility refers to the use of media to fulfill needs other than the need for information, such as leaving the TV on to overcome loneliness, while linkage refers to the ability of the media to unite people with similar interests as people who are experiencing the impact of the same natural event. According to the social utility function, it is assumed that people need companionship and emotional support and that the media can provide them with this in the absence of other human beings. The need for emotional support can be greater in disasters.

Communication technologies, such as mobile phones also have the ability to create community ties, which facilitate interaction between people with common interests by eliminating the limitation of physical proximity which brings in the concept of social capital. Social capital refers to those resources inherent in social relations, which facilitate collective action for mutual benefits. These resources include trust, norms, and networks of association representing any group that gathers consistently for a common purpose.

In order to gain community trust, there is a need for social capital. Studies show that social capital is critical for societies to prosper in sustainable development. It can, when enhanced in a positive manner, improve project effectiveness and sustainability by building the community's capacity to work together to address their common needs.[29] Mobile phones help in the creation of "social capital," or social empowerment. For example, the mobile pay phones owners in Bangladesh enjoyed not only a new source of income by renting out their mobile phones, but also gained a new status within their villages as a result.[30]

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[29]Woolcock. M. and Narayan. D. (August 2000) "Social Capital - Implications for Development Theory, Research. and Policy" Published in the World Bank Research Observer, Vol. 15
[30]Aminuzzaman, S., Baldersheim, H., Jamil, I. 2003 Talking back! Empowerment and Mobile Phones in Rural Bangladesh: a Study of the Village Phone Scheme of GrameenBankContemporarySouth Asia, Volume 12, Issue 3.

Researchers have also identified another source of social capital in the use of mobile phone airtime transfer, popularly known as 'sambaza', or airtime sharing, in Kenya, where most users feel the service is more beneficial from a social aspect than from an economic perspective.

Access to information through the internet or mobile phone has led to the question whether this strengthens or weakens kinship ties within the African culture as the tools provide knowledge and information outside the clans on the one hand. On the other hand, that majority of African societies are made of collective groups with extended families means that mobile phones can help solidify these connected communities in such a way to "cultivate and operate simultaneously many contacts", (van Bingsbergen 2003)[31].

Mobile phones meet and satisfy the cultural context of collectivism and this cultural meaning and social need can further provide motivation for families to purchase a mobile phone, (Diga, 2007). Mobile phones are used to mediate contact between different people, and so are likely to have an effect on the size, number and nature of social networks that people participate in. This in turn may affect levels of trust, says Goodman (2005).

Social capital may also provide an indicator of where take-up of mobile telephony could be higher. For example, a survey in Tanzania also found that mobile phone ownership in the communities surveyed was positively linked to life satisfaction and a willingness to help others.[32]

Sinha, 2005, however notes that social capital cuts both ways. While there are freedoms gained from being able to connect to others for economic and social reasons, there is also an increased level of duty to answer unwanted calls, inform kin of whereabouts. Interaction between members of a social network may also be used to coordinate illegal activities and cohesive groups may exclude others from joining them further exacerbating inequalities.

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[31] vanBingsbergen, W.M.J. 2003 "Can ICT belong in Africa, or is ICT owned by the North Atlantic region?" In van Bingsbergen, W.M.J., van Dijk, R. (eds) Situating globality: African agency in the appropriation of global culture: An IntroductionLeiden: Brill, African Studies Centre Yearbook 2003. 107-146
[32] Goodman, J. 2005. Linking Mobile Phone Ownership and Use to Social Capital in Rural South Africa and Tanzania. Featured in Vodafone Policy Paper Series, Number 2, March 2005

Greater levels of social capital make it easier to mobilize support for problem solutions as there is a sense of community. Community members can also mobilize to seek for change with the indicators of social capital including but not limited to participation in community affairs. Once individuals are aware of the risks facing them and the cost of disaster, community members can then exercise rational choice, which is seen to be motivated by the wants or goals that express their preference. Individuals act within specific given constraints and on the basis of information that they have about the conditions under which they are acting.

This study also borrows from the fundamental assumption underlying the social exchange theory that individuals always seek to derive gains from their interaction with others, which are largely determined by an evaluation of costs and benefits. As such, people will more likely consciously seek out disaster management interventions if risk information, for instance, is availed to them. A history of rewards and costs drives people to act the way they act with people tending to continue with what has been rewarding in the past and avoiding what has been costly. According to Blau (1964), a person who receives a benefit in a social interaction is expected to give in order to keep the relationship going. Disaster responders, have a role to nurture their relationship with the community members they serve through actions such as prompt response. If the police want information from the public on criminals, then the police are obliged to quickly act on community early warning information to build trust and reinforce such behaviour.

Stephen Vago in Social Change (1996), defines diffusion as the process by which innovations spread from one culture to another or from a subculture into the larger culture and is based on the idea on culturally dominant centres, which was made into a theory of social change by G. Elliot Smith. Diffusion is not always a one-way process but can be reciprocal as well.

Everett M. Rogers (1995) states that the crucial elements in diffusion are;

1) **The innovation,** such as a technological development or a new product.
2) Which is **communicated** through certain **channels** (word of mouth, advertising).
3) Over time and.
4) Among members of a **community.**

For an innovation to be adopted there are several stages it goes through:
1) Awareness – knowledge of the new idea but with inadequate information;
2) Interest – seeking more information;
3) Evaluation – mental application of the new idea to a present or future situation;
4) Trial – use of the innovation on a small scale to test utility; and
5) Adoption – acceptance of the innovation and commitment to its use.

Five characteristics influence the rate of adoption of an innovation. How they are perceived by members of a community is what governs their response to an innovation. These are:

1) **Relative advantage-** the degree to which an innovation is considered superior to the ideas it supersedes. For example, comparing the more innovative mobile-phone based cash transfers in emergency nutrition relief with the more traditional food aid.
2) **Compatibility** – the degree to which an innovation is seen as being consistent with existing values, past experiences and needs of the recipients. For example, mobile phone-based cash transfers may not be the traditional approach to helping hungry recipients but an innovator can seek community buy-in through awareness creation before using cash transfers to make the innovation more compatible.
3) **Complexity** – the extent to which an innovation is seen as relatively difficult to understand and use. Training helps to overcome this, such as mobile phone companies teaching remote communities how to use a cash transfer service.
4) **Tryability** – the degree to which an innovation may be experimented with.
5) **Observability** – the extent to which the results of an innovation are visible to others.

The type of innovation decision is related to an innovation's rate of adoption: optional – where an individual has a choice whether or not to adopt an innovation; collective- where a majority needs to be convinced about an innovation; and authoritarian – where a decision is superimposed upon a community. Communication channels are also considered as affecting the rate of adoption with interpersonal channels considered more effective with more complex innovations than mass media channels. The nature of the community – modern or traditional - and the extent of the change agents' promotional efforts also influence the rate of adoption, according to Vago (1996).

Various models describe the diffusion of innovations such as the centre-periphery diffusion model, which according to Schon, D.A (1971), is characterized by one source of innovation and multiple receivers of that innovation. Schon notes that the effectiveness of this system depends on the level of resources and energy at the centre, on the number of points at the periphery, the length of the radii or spokes through which diffusion takes place, and the energy required to gain a new adoption. An example would be the diffusion capability of an emergency health system using mobile phone technology, which would depend on the innovator's own energy and resources, the number of areas/locations reached by the system and the time and effort devoted to each of these areas.

The proliferation of centres model of diffusion describes the situation whereby the receivers of innovations become innovators in their own right. It retains the basic centre-periphery structure but tends to differentiate the primary from the secondary centres. The primary centres manage and support the secondary centres which in turn engage in the diffusion of innovations. The primary centres oversee policies and methodology, selects territories for expansion, develops methodologies for diffusion, trains new agents for diffusion, sustains decentralized outposts through finances, information and know-how, monitors decentralized operations and maintains information throughout the network of outposts. The M-PESA cash transfer service has followed this model.

The derivative effects of diffusion may be illustrated by changes in Kenya resulting from the rapid adoption of mobile phones. These changes were first apparent in improvements in telecommunication reach as more people had access to mobile phones compared to landlines. The economy has also been affected with mobile phones increasingly being used to facilitate M-banking transactions to the benefit of thousands without access to formal bank accounts. The mobile phone sector is also a huge employer of engineers, customer care representatives, marketers, M-PESA agents, among others. Mobile phones are also changing how people who are caught up in emergency situations ask for help and how they receive it. They have also increased phone-related crime as well as led to new forms of recreation Mobile phones are also leading to the emergence of new modes of social communication such as slang peculiar to the youth popular in short message texting. Churches are also increasingly relying on mobile phones to seek funds as are aid and emergency relief organizations.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design, the methodology of the study, the study population, sampling and data collection techniques as well as the data analysis procedures.

3.2 Area of Study

In the research study, one of the case studies, the Concern Worldwide project, covered the Keiyo area, in Kenya's Rift Valley region, while the other three case studies; the Kenya Red Cross Society, the National Disaster Operations Centre and the Kenyan Chapter of the Freedom From Fistula Foundation, covered Kenya, in general. The study was conducted between January and June 2011. Secondary data has regularly been updated to keep up with the technological changes.

3.3 Site selection and description

The study sites for the study were the offices of the key organizations' informants; the Kenya Red Cross Society, the National Disaster Operations Centre, the Kenyan Chapter of the Freedom From Fistula Foundation and Concern Worldwide, all of which are located in Nairobi, Kenya. These sites were purposively selected due to their geographical location. Getting all the key respondents in Nairobi, where the researcher was also based, was an added advantage. The four organizations studied all had their key personnel, who were key informants in the study, stationed at the headquarter level in Nairobi making it ideal for the purposes of face-face interviews.

3.4 Research design

The research design adopted for this study was the descriptive research design. Descriptive research is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation, according to Key, J. P. (1997). The research sought to provide a valid representation of the factors relevant to the research questions: to describe, from an organizational perspective, the forms of usage of mobile phones in emergency and disaster management in Kenya, the reasons for the adoption of the technology as well as the operational and socio-cultural challenges of the same. The social capital effects of this integration of mobile phones in emergency and disaster management was also explored. The descriptive research design was chosen as the nature of the problem being studied was considered describable; data gathered was easy to qualify and had the ability to be organized according to key patterns and themes.

The case study research approach was also used in the study. Yin, R. K. (1984) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used. The case study research design was used to help to generally answer the "how" and "why" research questions, for example, how mobile phones are being used in emergency and disaster management in Kenya and why the technology is being adopted for this purpose.

3.5 Study population

Four organizations, which were purposively and conveniently selected for the purposes of this study, comprised the study population with four key officials of the same organizations comprising the key informants for the in-depth interviews.

The organizations selected were:

1) **The Freedom From Fistula Foundation (FFFF) – Kenya:** FFFF- Kenya is helping to provide free surgeries to fistula-affected women.

Established in 2008, FFFF- Kenya funds a range of projects that have the capacity to treat up to 1,000 women each year, out of the estimated 3,000 annual cases.

2) **Concern Worldwide** is an international humanitarian organization dedicated to tackling poverty and suffering in the world's poorest countries. The NGO works in partnership with the very poorest people in countries such as Kenya directly enabling them to improve their lives. The organization uses its knowledge and experience to influence decisions made at a local, national and international level that can significantly reduce extreme poverty.

3) **The National Disaster Operations Centre (NDOC)** is charged with coordinating the response to disasters in Kenya. The NDOC was established after the El Niño Floods of 1997 and then adopted after the 1998 terrorist bombing of the US embassy. The NDOC enjoys the secondment of personnel from various government ministries and the military and has operational links with all emergency responders, public and private hospitals, military and police rescue units and humanitarian agencies in Kenya.

4) **The Kenya Red Cross Society (KRCS)** is a leading humanitarian organization in Kenya whose mission is to work through its networks, and with communities, to prevent and alleviate human suffering and save the lives of the most vulnerable. The society was formed in 1965 through an Act of Parliament, Cap 256 of the Laws of Kenya, and enjoys a large network of volunteers at the grassroots.

3.6 Sampling techniques

Purposive sampling of organizations that were thought to be relevant to the research was used with the key criteria of selection being past or present use of mobile phone technology in emergency and disaster management in Kenya. The four organizations were purposively selected for maximum variation by exploring their diverse uses of mobile phone technologies in emergency and disaster management in Kenya.

Convenience sampling was also used as the study was exploratory and interested in getting data on the key themes and trends on the role of mobile phone technology in emergency and disaster management in Kenya.

3.6.1 Rationale for the selection of the four organizations

The researcher selected four organizations; the Freedom From Fistula Foundation (FFFF), Concern Worldwide, the National Disaster Operations Centre (NDOC) and the Kenya Red Cross Society (KRCS, as case studies for the study as the integration by organizations of mobile phone technologies in their emergency and disaster management in Kenya is mainly still being piloted in short-term initiatives.

The organizations selected were:

1) **The Freedom From Fistula Foundation (FFFF)** was purposely selected due to its unique approach in utilising mobile phones to tackle obstetric fistula which is a major maternal health challenge in Kenya. Using a mobile phone hotline number, potential patients are assessed over the phone and scheduled for surgery no matter where they live.

   FFFF-Kenya also provides patients with bus fare to Nairobi via Short Message Service, if required, and oversees their transport home. Even when fistula is ruled out, women who have called the fistula hotline service end up benefiting from information on the possible causes of their health conditions such as urinary tract infections and are guaranteed a listening ear.

2) **Concern Worldwide** was purposively selected as the researcher considered it an extreme case. The NGO in 2008 pioneered the use of mobile phone-based cash transfers in Kenya to respond to food insecurity in the Kerio Valley region. This pilot project, was considered a success, according to an evaluation of the same and has to date continued to provide lessons learned for other NGOs interested in deploying mobile technologies in their emergency operations in Kenya.

Concern Worldwide was thus selected for the study to help to enrich it by providing the lessons learned by giving a retrospective perspective of the organization's experience in using mobile phones in emergency and disaster management in Kenya.

3) **The National Disaster Operations Centre (NDOC)** was selected to provide a perspective that was not NGO-based. given that it is a government entity, whose uniqueness was further exemplified by its role in coordinating disaster management from the grassroots nationally. Through the NDOC, the researcher sought to describe how mobile phones are enhancing or detracting the NDOC from its unique mandate of coordinating disaster response in all parts of Kenya.

4) **The Kenya Red Cross Society (KRCS)** was selected as it gave the researcher an opportunity to examine its use of mobile phones in fundraising for disaster response. KRCS is also an indigenous Kenyan organization, unlike the first two case studies, which operates through a network of 64 branches country-wide with more than 70,000 volunteers and members.

3.6.2 Rationale for the selection of the key informants

The key informants from the organizations described in the preceding section were selected conveniently and purposively based on their relevance. ability to respond to the study questions, their availability and their organizational functions.

The key informants were:

1) **The Country Director, Concern Worldwide Kenya**
   Reason for selection: Following Concern Worldwide's 2008 pioneering use of mobile phone-based cash transfer services to address food insecurity in the Kerio Valley region. the researcher felt that the head of the organization would be best placed to answer the research questions while also giving a compressive view of the lessons learned. The country director was also in a position to provide the researcher with an evaluation report of the pilot project which formed part of the researcher's secondary data sources.

2) **The Executive Director, Freedom From Fistula Foundation**

   Reason for selection: The executive director was selected due to her in-depth knowledge of the Freedom From Fistula Foundation programme in Kenya since its inception in 2008. The director was also able to link up the researcher with one of FFFF's beneficiaries, who helped to enrich the data collected, even though the focus of the research was on the organizational perspective of those using mobile phones in emergency and disaster management in Kenya.

3) **The Military Desk Officer, National Disaster Operations Centre (NDOC)**

   Reason for selection: NDOC staff include members of the military seconded to the centre for their skills in disaster management. The NDOC head at the time, upon my interview request, designated the military desk officer to provide the necessary information on behalf of the NDOC on the organization's use of mobile phone technology in emergency and disaster management in Kenya.

4) **The then Kenya Red Cross Society (KRCS) Communications Manager**

   Reason for selection: The communications manager was selected due to his role as the then external communications focal point at the Kenya Red Cross Society. The position mandated him to articulate the organization's policies externally.

3.7 Data collection procedures, tools and techniques

The study utilized both primary and secondary data collection techniques and sources. These included:

Face to face interviews with key informants: The primary data was obtained through key informant interviews with officials of the Kenya Red Cross Society, the NGO Concern Worldwide, the Freedom from Fistula Foundation and the National Disaster Operations Centre. Interviews were held with the key informants and entailed the taking of detailed ethnographic notes. The face-to-face interview option was selected to allow a guided and more in-depth discussion of the interview questions.

A semi-structured interview schedule was used to provide a thematic guideline in line with the study's objectives; the forms of usage of mobile phones in emergency and disaster management in Kenya, the reasons for the adoption of mobile phones in emergency and disaster management in Kenya and the operational and socio-cultural challenges encountered and the social capital effects of the same.

Photographs were also used to illustrate some of the hazards in Kenya, advertisements of the M-PESA cash transfer service and Kenya Red Cross Society appeals for mobile phone-based cash donations for its emergency operations.

Beneficiary testimonials were also used, where possible to enrich the study.

The secondary data sources used in the study included:

1) Reports from the Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP) reports: Innovative Emergency Response in Kenya and ALNAP Innovations, CASE STUDY NO. 1 Cash Transfers through Mobile Phones : An Innovative Emergency Response in Kenya; an Evaluation of Concern Kenya's Kerio Valley Cash Transfer Pilot; a Human Rights Watch 2010 report entitled, "I Am Not Dead, But I Am Not Living" Barriers to Fistula Prevention and Treatment in Kenya; IRIN News and Voice of America articles were used such as one entitled, KENYA: Fighting the misery of fistula and harnessing the power of social media, respectively; and Overseas Development Institute reports such as one entitled, Cash transfers in post-conflict contexts.

2) Organizational websites write-ups also provided some secondary qualitative data and these included Safaricom, The Freedom From Fistula Foundation, Concern Worldwide, the Kenya Red Cross Society, the National Disaster Operations Centre, UNFPA's End fistula campaign and the UN Foundation Vodafone Group Foundation Partnership website.

3.8 Data Analysis

The study used qualitative analysis to answer the research questions. Having conducted the in-depth key informant interviews and also transcribed the raw data from the same, the researcher, who was familiar with the data, reviewed and coded it by breaking it down into small chunks in order to draw together all extracts relating to one theme from each interview. The same was done for secondary sources of information.

A coding system was developed, which took into consideration various aspects of the data such as labeling, definitions and descriptions of key themes. It involved lumping together those words, phrases and statements which appeared to be similar. The similarities and differences in the data were noted to identify the key patterns. Once the data was coded and the emerging themes categorized, it was subjected to various descriptive analysis techniques such as narrative analysis, discourse analysis and constant comparative analysis.

Discourse analysis was especially useful in analyzing both primary and secondary data relating to obstetric fistula, a hole in the birth canal, resulting from prolonged obstructed labour. Segments of the data collected from the testimonial with a fistula survivor, for example, whereby the researcher acted primarily as an attentive listener, was later examined to understand meaning at a "meta" level, rather than simply at the level of actual semantic meanings due to the culturally sensitive nature of some the social effects of fistula such as the breakdown in marital relations.

The researcher also used constant comparative analysis to look for statements that occurred over time in the study which helped in description and explanation. The findings were presented in a coherent descriptive form focusing on the overarching themes.

3.9 Limitations of the Study

Four organizations were selected as case studies for the study thus the results may not be generalized. However, this was done as the research was exploratory and descriptive to allow for the gathering of initial qualitative data on the role of mobile phone technology among organizations involved in emergency and disaster management in Kenya.

Acknowledging that a beneficiary perspective on the role of mobile phones in emergency and disaster management in Kenya would have also been beneficial, the study opted for the organizational perspective to answer the research questions due to the pilot nature of most projects integrating mobile phone technology in their emergency and disaster management activities in Kenya.

The case studies selected for study also did not lend themselves to beneficiary investigation. This is because of the amorphous nature of beneficiaries in the case of the National Disaster Operations Centre and the Kenya Red Cross Society. The Freedom From Fistula Foundation beneficiaries were also found to be difficult to follow up on – fistula mainly affects women in remote parts of Kenya where access to quality healthcare is a problem. With regard to the Concern Worldwide case study, the researcher was examining the 2008 pilot in retrospective to investigate the lessons learned from the organization's pioneering use of mobile phone technology to meet a food insecurity community's nutrition needs.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This section of the study will present data collected from the sampled organizations on the forms of usage of mobile phones in emergency and disaster management, the reasons for the adoption of mobile phones for the same, the operational and socio-cultural challenges of adopting mobile phones in emergency and disaster management and the social capital effects. The organizations selected for the purpose of this study are the NGO Concern Worldwide, the Kenya Red Cross Society (KRCS), the National Disaster Operations Centre (NDOC) and the Freedom From Fistula Foundation (FFFF-Kenya) all of which have integrated mobile phone technology into their activities.

In 2008, the NGO Concern Worldwide had a mobile phone-based cash transfer programme in the Kerio Valley area in Kenya's Rift Valley region to address rising food insecurity there. The affected Tugen and Pokot communities had lost their livelihoods due to an increase in livestock rustling after the withdrawal of local security forces from the area to address the early 2008 post-election violence elsewhere. The loss of assets and homes led to a descent into food insecurity. The Concern Worldwide project targeted some 571 households and was carried out from March to June 2008 in partnership with the Diocese of Eldoret.

The Kenya Red Cross Society (KRCS) has an emergency operations centre at its Nairobi headquarters which links up its various offices via high frequency and very high frequency radio equipment, mobile phones and the internet. To enable the organization coordinate emergency response, KRCS has dedicated mobile phone hotline numbers, which have been allocated to key officers handling disaster management. The organization is also using mobile phones for emergency and disaster fundraising.

Emergency and disaster management has for long been recognized as a key requirement to spur sustainable growth and one of the institutions charged with the responsibility in Kenya is the National Disaster Operations Centre (NDOC). Established in 1998 following the devastating effects of the El Niño rains to coordinate disaster management stakeholders, the NDOC works in coordination with local community based organizations, district and provincial disaster management committees and other humanitarian actors delegating duties to stakeholders so that they know who does what in case of an emergency. Besides being reachable to district administration officials via mobile phones to offer support to the public in case of emergencies and disasters, the NDOC also conducts regular disaster sensitization campaigns.

The Freedom From Fistula Foundation (FFFF) Kenya Chapter was established in 2008 to address cases of obstetric fistula. Fistula develops when women suffering from obstructed labour, often due to a lack of skilled healthcare, struggle during this agonising process and end up developing large gaps between the birth canal and bladder or rectum leading to incontinence. Fistula can also result from traditional practices such as female genital mutilation[33] and rape, especially in younger girls. According to the Kenya Demographic and Health Survey (KDHS) preliminary report for 2008-09, only 43 percent of deliveries take place in health facilities and as a result, Kenya records at least 1,000 new fistula cases annually. FFFF-Kenya[34], along with local partners such as the Kenyatta National Hospital and the African Medical and Research Foundation helps women receive available but often inaccessible corrective surgery to repair fistula; mobile phones help facilitate access to this crucial emergency service enabling them to actively engage in productive socio-economic activities.

Fistula is threatening not only to the physical health of an affected woman but her mental health too due to the social stigma associated with the condition. If left untreated, infections can lead to kidney disease and kidney failure.

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[33] "I Am Not Dead, But I Am Not Living" Barriers to Fistula Prevention and Treatment in Kenya, Human Rights Watch, July 2010
[34] Freedom From Fistula Foundation http://www.freedomfromfistula.org.uk/index1.html

4.2 The forms of usage of mobile phones in emergency and disaster management

From the interviews (see appendix) conducted with the organizations' officials, several key themes emerged with regard to how the organizations are using mobile phones in emergency and disaster management including:

1.   Mobile phone-based cash transfers in emergency and disaster response ;

2.   Mobile phones in emergency and disaster support and;

3.   Mobile phones in emergency and disaster preparedness.

4.2.1 Mobile phone cash transfers in emergency and disaster response

Cash transfers have not been a common choice in post-conflict programming and in-kind transfers such as food-aid, agricultural inputs and basic necessities have dominated. This has been, in part, due to concerns about the feasibility of delivering cash, including concerns over creating inflation in weak markets, difficulties in targeting, and the appropriateness of cash as a social protection instrument.[35] The arguments for cash transfer programmes include: cash can boost economic growth in the local economy; recipients of cash will be empowered by giving them choice over expenditure; and cash is more cost-effective than in-kind transfers. Cash transfers can also be appropriate, largely because of their visible and tangible nature in transferring resources.   Cash transfers are especially useful at times when there is an urgent need to transfer funds as was the case with the NGO Concern Worldwide during the 2008 post-election violence.

Upon realization that transporting and distributing food to the affected population in Kerio valley would be both costly and insecure, Concern Worldwide selected M-PESA, a mobile phone-based cash transfer system.

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35 Cash transfers in post-conflict contexts http://www.odi.org.uk/resources/download/3507.pdf© Overseas Development Institute 2009ISSN 1756-7602

M-PESA 36 is a joint venture between Vodafone and Kenya's largest mobile phone company and Vodafone affiliate Safaricom. which allows cash to be sent over the telecoms network.

The photo above, courtesy of Kiwanja/Flickr[37], shows a poster advertising M-PESA services. The pioneering M-PESA mobile phone-based cash transfer service is starting to be used to quickly and conveniently to send money to needy crisis populations.

Safaricom agents from the towns of Iten and Eldoret travelled to the local Kinyach Police Station in Kerio Valley for cash distribution which was organized on local market days to ensure added security and access to commodities. Beneficiaries received fortnightly cash transfers of KSh320 per household member for three months to meet at least 50 percent of the household food requirements. Concern Worldwide38 relied on an earlier food price survey.

36 Safaricom http://www.safaricom.co.ke/index.php?id=745
37 M-pesa photo http://www.flickr.com/photos/kiwanja/3169409467/
38 Interview with Concern Worldwide Country Director Anne O'Mahony

Conversation Box One: Concern Worldwide*

Q. How did Concern Worldwide use mobile phones to help address food insecurity?

A. "We thought the best way of getting effective aid to these people was cash. This [M-PESA] system enabled the beneficiaries to get easy access to the cash and they could buy necessary food immediately," said the Concern Worldwide Kenya Director.

"If the markets work, there is no point in us buying goods, taking them to the area and distributing them - we might not get the type of goods required right and there are also issues to do with trucking food. Cash made much more sense."

Q. What were some of the challenges encountered in this use of mobile phones?

A. "We found that one mobile phone per large group of people is not enough, we will need to get more phones," she said.

Of the 571 targeted households, 225 (39 percent) owned a phone. Concern provided 45 handsets to enable the clusters, comprising about 10 people each, to share one handset between them, along with 60 solar chargers – this raised project costs.

Q. What was the social impact of placing mobile phones into the hands of the target group?

A. "The mobiles reduced their isolation," she said. "These people are mobile so they can go wherever they can get cheap food. If there is money, the food will come ... merchants will come. People suffer because they can't buy."

* Excerpt: Concern Worldwide Interview

Mobile cash transfers to address food insecurity were recognized as a way of overcoming the challenges posed by the terrain and the security situation in Keiyo by the NGO Concern Worldwide.

An agreement between Concern Worldwide and Safaricom allowed for bulk cash transfers to the beneficiaries – M-PESA is intended for one-on-one transfers up to a limit of 140,000 Kenya shillings a day.

4.2.3 Mobile phones in emergency and disaster support

In the case of the Freedom From Fistula Foundation (FFFF), mobile phones are helping to facilitate access to emergency fistula repair.

To create awareness on the availability of the repair service, FFFF officials inform women of the service via vernacular radio programmes, fistula is more prevalent in remote areas with limited access to quality healthcare, in addresses to women groups and church gatherings among other fora. A mobile phone hotline number, 0718 100 000, is provided for affected women to reach FFFF officials on for help. Upon receipt of such phone calls, as many as 200 per day, according to FFFF officials, and the subsequent establishment of incontinence problems through follow-up questions, FFFF gives the women, majority of whom are rural based, an appointment to travel to Nairobi for the corrective surgery. Sometimes, FFFF facilitates the women's travel by sending cash for bus fare via M-PESA.

The above photo, courtesy of IRIN News, shows a nurse listening to the foetal heartbeat of a pregnant woman. Pregnant women who experience obstructed labour during delivery can end up developing fistula if there is a lack of timely qualified medical care. "Fistula is really about not being able to get a caesarian section. This could be due to delays in accessing the hospital at the village, delays in referrals. You can also be in a hospital but develop fistula because of a delay in diagnosis," said the executive director of the Kenya chapter of the Freedom From Fistula Foundation director (FFFF).1

Every Tuesday and Friday, a bus from the FFFF office in the Langata suburb, south of Nairobi, heads to the city centre to pick up the women, some of whom have travelled hundreds of kilometres from their rural homes, from the various bus stops. A lot of follow-up on the women's location is done via mobile phones. Women who do not own mobile phones often borrow from family and friends to keep in touch with the FFFF officials. Upon arrival in Nairobi, FFFF officials receive the women who are then taken to the Jamaa mission hospital in the eastern Buruburu suburbs for free surgical repair. Normally, the surgery costs between 30,000 and 100,000 shillings, a prohibitive amount for most fistula-affected women.

Conversation Box 2: Freedom From Fistula Foundation*

Q. How is the Freedom From Fistula Foundation (FFFF) using mobile phones in fistula emergency care?

A. "Whoever gets the [0718100000] hotline number calls, flashes [beeps], or texts and we call them back and ask a couple of questions to establish if they are fistula patients. When in doubt, there are incontinence issues." said, Kenya's FFFF executive director.1

Q. What are some of the challenges in this use of mobile phones?

A. "It is costly getting a dedicated fistula hotline. We also have to pay for the mobile phone calls we make to prospective beneficiaries. Then there are prank callers who we have to deal with as we make sure we respond to every text message, call or beep."

Q. What kind of social impact would you say this use of mobile phones has?

A. "Besides facilitating access to care throughout the whole process from the initial phone call to making surgery appointments, to sending bus fare and following up on beneficiaries, the mobile phones help give the women back their lives. The greatest success is to see a woman who previously had no life in her eyes become dry and feel like a woman again. The greatest desire for most women after surgery is to have another baby."

***FFFF Interview Excerpt**

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The National Disaster Operation Centre (NDOC) is also using mobile phones to facilitate emergency and disaster response in case of accidents, fires and other emergencies across the country in liaison with local-level committees. For example, during the 1 February 2009 Sachangwan fire incident in Molo District, NDOC officials were able to access information quickly enabling them to send a response team. The incident occurred after a petroleum truck hauling hundreds of litres of inflammable petroleum products overturned spilling its contents along the busy Nakuru-Eldoret highway. Surrounding community members who rushed to the scene to scramble for the fuel were unfortunately caught up in a fire which led to the deaths of at least 89 of them with dozens others sustaining serious burn injuries necessitating prompt evacuation, which is part of the NDOC's niche.

"Even though we did not manage to save lives at Sachangwan, we managed to salvage the tanker preventing further damage. Imagine what would have happened without the mobile phone?" posited a military officer, with the National Disaster Operations Centre (NDOC)[39].

"The mobile phone is very useful in responding to emergencies and disasters... If there is a problem in Mombasa, in five minutes we know. They [those affected] just call our operations room and then we use the provincial administration to confirm the report before acting on it," said the military officer[1].

When a crisis happens, people who have been affected and the information that they can provide create a local, instant command system allowing NGOs, to act with the resources on the ground, notes a Voice of America report[40].

Technology, it says, is merely another way that we need to continue to empower the public to have greater ownership and understand the roles and responsibilities they have, and to provide them the knowledge, so they can make the best possible decision for them and their families in a time of crisis.

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39 Interview with NDOC's military officer
40 Voice of America: Harnessing the power of social media [http://www.voanews.com/english/news/usa/US-Disaster-Relief-Officials-Look-to-Harness-Power-of-Social-Media-100573424.html]

4.3 The reasons for the adoption of mobile phones in emergency and disaster management

The role that mobile phones are playing in increasing the effectiveness of emergency and disaster response is undeniable. According to the KRCS communications manager, 41 mobile phones help in the coordination of personnel during disaster response activities, the coordination of logistics between KRCS, partners and beneficiaries and in connecting separated families.

Conversation Box 3: Kenya Red Cross Society (KRCS)*

Q. Why is the Kenya Red Cross Society using mobile phones in emergency and disaster management?

 A. "Mobile phones have enhanced disaster management, especially at the regional level as personnel on fieldwork duty can link up with their offices and update them on any developments. Mobile phones also enable personnel to send short messages, which are relayed any time of the day or night," said the KRCS Communications Manager.

"KRCS's family links service, which helps in the tracing of missing persons after emergencies and dusters, also relies on mobile phones to communicate with affected populations and field staff."

*Excerpt from interview with the Kenya Red Cross Society

The Kenya Red Cross Society's family links services have been helping to facilitate the initial contact with relatives left behind among Somali refugees in Kenya.

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41 Interview with the KRCS Communications Manager

In 2011, for example, over 7,000 Somali refugees in north-eastern Dadaab refugee camps were able to speak with their families via mobile phone. The mobile-phone service was launched on 18 August and is jointly run with the International Committee of the Red Cross (ICRC). "These men, women and children are exhausted when they finally make it to Dadaab," said Valérie Preisner, the ICRC protection coordinator in Nairobi, in a statement on the ICRC website.

"For most, letting their families know they have arrived safely is as important as finding food and water. Keeping in touch with their relatives gives them a bit of comfort in an extremely difficult situation."

Mobile phones have also come in handy in mobilizing relief aid to support those affected by various disasters such as floods and drought. The Kenya Red Cross Society is also using mobile phone-based cash transfers to help fund the organization's emergency and disaster preparedness activities. In conjunction with telecoms companies, KRCS sets up short mobile cash transfer code numbers, through which people can text in to make donations. This is enabling the organization to be better prepared for emergencies and disasters by for example pre-positioning food and non-food supplies in potential need areas.

The above photo, from the Kenya Red Cross Society, shows an advertisement appealing for cash donations to be made to the organization via mobile phone. The Kenya Red Cross Society is one of the few organizations in Kenya that have embraced mobile phone SMS-based fundraising to support its emergency operations programming.

In the case of the Concern Worldwide project, the use of the mobile phone-based M-PESA cash transfer service also offered a unique and empowering approach to efficiently deliver aid, according to a 2009 report by the Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP).

Also important, noted the report was the project's ability to shift the operational risk involved in the cash transfer to a third party, Safaricom, which is specialised in mobile phone-based cash distribution.

The partnership between Concern Worldwide and Safaricom demonstrated that the private sector has significant and unique abilities to enhance the effectiveness of emergency response, and more importantly they can do so while maintaining their core business principles. The project demonstrated how technology can empower poor, marginalised and vulnerable people, added the ALNAP report.

Improved telecommunications, due to an increase in mobile phone service providers and lower handset and calling costs in Kenya, has meant that mobile phones are increasingly available to both the public and aid providers opening up greater opportunities in emergency and disaster management.

"If we look back to when Telkom [Kenya's landline telephone service provider] was a monopoly, getting a phone in the house was difficult. The payment of phone bills in offices was also hard and the disconnection of landline phones due to unpaid bills common. Now everybody else can afford a mobile phone," said a military officer with the National Disaster Operations Centre (NDOC)

In the case of the NDOC and similarly in the case of the Freedom From Fistula Foundation (FFFF), mobile phones serve as the first line of contact between potential beneficiaries and responders and play an awareness creation and facilitation role. It is through the mobile phone for example, that FFFF officials are able to conduct an 'evaluation' of sorts with potential beneficiaries through a series of questions to establish fistula symptoms.

The mobile devices are the appointment making and follow-up tools throughout the whole fistula emergency management process including facilitating travel for some beneficiaries via cash transfers from their remote locations to the hospital in Nairobi, to accessing follow-up care.

The reasons for the use of mobile phone technology in emergency and disaster management in Kenya include:

Convenience and Flexibility: Mobile phones have come in handy in the mobilization of relief aid at the click of a phone button to support disaster victims. According to Concern Worldwide's Kenya Country Director, the cash transfers enabled beneficiaries to buy food immediately and cost less than a direct food distribution while reaching more beneficiaries.

Effectiveness: According to the then Kenya Red Cross Society Communications Manager, 42 mobile phones help in coordinating personnel and logistics during disaster response. "Mobile phones have enhanced disaster management, especially at the regional level as personnel on fieldwork duty can link up with their offices and update them on any developments.

Mobile phones also enable emergency management personnel to send short messages, which are relayed any time of the day or night. A military officer with the NDOC, said: "If there is a problem in Mombasa, in five minutes we know."

Public-private partnerships: Concern Worldwide and Safaricom collaborated in the cash transfer project demonstrating that the private sector can enhance the effectiveness of emergency response, notes a 2009 report by the Active Learning Network for Accountability and Performance in Humanitarian Action. This is also the case with Kenya Red Cross Society, which also fundraises via mobile phones.

Availability: Improved telecommunications, due to lower mobile phone handset and calling costs is opening up greater opportunities for the technology's use in emergency and disaster management. "Now everybody else can afford a mobile phone," said NDOC's military officer.

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42 Interview with the then KRCS Communications Manager, Titus Mung'ou

4.4 The operational and socio-cultural challenges in integrating mobile phones in emergency and disaster management

Several key operational and social-cultural challenges in the use of mobile phone technology in emergency and disaster management in Kenya were identified from the case studies:

Sustainability and Cost: According to Concern Worldwide's Kenya Country Director, plans to scale up the project would depend on funding with the ratio of mobile phones to families needing to be increased; about 60 percent of the targeted beneficiaries did not have previous access to mobile phones. Concern Worldwide provided 45 handsets to clusters of 10 people, along with 60 solar chargers. Despite a general reduction in mobile phone costs the handsets still remain relatively expensive and out of the reach of some remote communities which unfortunately are also often worst-affected by disasters. Besides being expensive, mobile equipment also creates coordination problems of its own.

As a 2008 report by the UN Foundation–Vodafone Group Foundation Partnership, titled 'Wireless Technology for Social Change: Trends in NGO Mobile Use' notes, "Most of the projects that have used the mobile-phone technology have been small in scale and preliminary probably due the high costs of developing and deploying mobile technologies." However, according to an evaluation of the project43 , compared to direct food distribution, M-PESA use cost Concern Worldwide less and provided an opportunity to reach more beneficiaries, and had the potential to have a positive residual impact on the communities involved.

Targeting: With the Concern Worldwide pilot project involving cash transfers, albeit via the mobile phone, the inherent challenges of the same were observed. There was some pressure to put members of the community who did not meet the targeting criteria on the beneficiary list due to the large number of food-insecure people in comparison to the size of the pilot. This was addressed by transparently identifying the most affected community members from the different ethnic backgrounds in the project area. The target beneficiaries, selected by the community from among the most vulnerable were women.

43Brewin. M. (2008). 'Evaluation of Concern Kenya's Kerio Valley Cash Transfer Pilot', Nairobi: Concern Kenya.

As noted, the small size of the pilot was a challenge too given the scope of need in the project area.

Literacy: As is the case with other technologies, the use of mobile phones in disaster and emergency management calls for literacy. In the case of cash transfers, registration for the M-PESA service requires proof of identity - most potential women beneficiaries in the Concern Worldwide project were illiterate or did not have the identification documents required to collect the cash. M-PESA runs on an SMS platform thus users' needs to be literate. These clusters of 10 beneficiaries each were therefore required to nominate one literate person as leader to collect the money on behalf of the group before the issuance of individual SIM, Subscriber Identity Module, cards. The M-PESA app is installed on Safaricom SIM cards.

Technology and Training: There was initial reluctance to embrace the mobile phone-based cash transfers as assistance to beneficiaries with the Concern Worldwide local partner in the 2008 Kerio Valley pilot, instead preferring to maintain direct contact with project beneficiaries as was the case in past food aid distributions.

Time was taken to explain the process. Considerable time was also spent overcoming registration and technical challenges such as training beneficiaries in the use of M-PESA, according to an evaluation of the project, which noted that this was necessary for the success of the overall cash transfer process.

According to the then Kenya Red Cross Communication's Manager, the limited training of personnel on the use of mobile phones and other social media tools and the impact of the same, probably due to resource constraints is also a challenge.

Mobile phone misuse: In Kenya, the mobile phone has been used to circulate hate messages between ethnic groups as well spread alarmist rumours that serve to fuel ethnic discord. In the case of disaster managers, it is essential that vigilance in evaluating data for accuracy is exercised while co-opting mobile technologies.

The misuse of mobile phones is a big problem. "Sometimes people call us to report a small accident. Some people just misuse their mobile phones to see a bit of action," noted a military officer with the National Disaster Operations Centre (NDOC).

Conversation Box 4: National Disaster Operations Centre*

Q. What are some of the challenges in your organization's use of mobile phones in emergency and disaster management?

A. "Many people don't know about our hotline numbers. We also tell the public that you don't necessarily have to call the NDOC centre for help, there are other village representatives in your areas who can respond faster in case of emergencies," said a military officer with the National Disaster Operations Centre (NDOC). "There is also not much we can do about mobile phone costs since telecommunication service providers are also in business. It is also not feasible to provide everyone with a mobile phone to enhance access to emergency support which would be the ideal situation."

***Excerpt from interview with the NDOC military officer**

Access to Information: According to the NDOC, there is a need for more government support in the uptake of ICT as well as in enhancing the capacity of local disaster responders such as town and municipal councils. With the public often unaware of the emergency hotlines to call in case of emergencies and disasters, the NDOC holds regular awareness and advertisement campaigns such as road shows. "Many people do not know about the hotlines. There are also those who are hesitant to use their airtime to call," said a military officer with the NDOC.

Access to health information is vital. However, fistula-affected women, more often than not are in remote regions poorly covered by telecommunications and health networks yet the success of the fistula correction programme depends on the organization's hotline number being known. "The funding is there; it is reaching the women and getting them to the hospital that is a problem," said FFFF's executive director.

4.5 The social capital effects of integrating mobile phones in emergency and disaster management

An evaluation of the Concern Worldwide project noted that the primary added value offered by mobile technologies in their disaster response effort lay in the potential to facilitate the enhanced exchange of information, and the communication opportunities created by placing mobile technologies in the hands of those previously without access. The innovation demonstrated that making information technology accessible to poor people by developing relevant schemes can empower them directly, giving them the opportunity to connect with friends and relatives, and providing an increased sense of belonging and security.

"[The] use of a process which required beneficiaries to interact with new technology transformed them from benign recipients of aid to the active participants in a process. The provision of phones, SIM cards and chargers also gave recipients an opportunity for communication that they had never experienced before," noted a survey of the Concern Worldwide project. Besides using their newly-acquired mobile phones for cash transfers, residents said additional benefits included being able to warn friends about ongoing or impending cattle rustling attacks. A project beneficiary said: "The mobile phones are useful for providing warnings about cattle rustling."44

In the project too, women household leaders where possible were registered to collect the money giving them greater control over household purchases. However, some of the women lacked identification documents, which could be to some extent attributed to their lower levels of education, reliance on their husbands or other male relatives to attend to 'official' matters, most of which require identification documents.

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44 Interview with Panuel Luker

The splitting of the beneficiaries into groups of 10 in the first cash distribution further helped to strengthen the sense of community and trust amongst cluster members. Increased collaboration with the police and others in the course of the Concern Worldwide pilot project was also important. The cash transfers also enabled beneficiaries to set their own priorities with regard to meeting their food needs, which was important in creating a sense of community ownership.

In addition to the immediate operational implications of Concern Worldwide's use of M-PESA, the reported perspectives of the recipients involved in the project-empowerment, engagement, and a greater sense of dignity – have implications for how agencies approach the delivery of aid in emergencies. Although Concern Worldwide used M-PESA in an emergency context, this model could also be replicated in a community development context, which could incorporate a wide range of social protection activities, says the ALNAP report.

In the case of the NGO Concern Worldwide, the use of a mobile phone-based cash transfer service to address food insecurity offered a unique and empowering approach to efficiently deliver aid, notes the Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP) in a report[45].

The partnership between Concern Worldwide and Safaricom demonstrated that the private sector has significant and unique abilities to enhance the effectiveness of emergency response, and more importantly they can do so while maintaining their core business principles. For example, Safaricom's bulk transfer service[46], which Concern Worldwide was able to use, enabled it to send money to many people; M-PESA is normally intended for one-on-one cash transfers of up to Ksh 140,000 per day. The Concern Worldwide project demonstrated how mobile phone technology can empower poor, marginalised and vulnerable people, added ALNAP. A strong local partner with knowledge of the context was also essential to overcome challenges such as complex administrative and ethnic boundaries in the quickest possible time. The partnership with the Catholic Diocese of Eldoret helped address this.

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45 ALNAP Innovations, CASE STUDY NO. 1 Cash Transfers through Mobile Phones: An Innovative Emergency Response in Kenya http://www.alnap.org/pool/files/innovationcasestudyno1-concern.pdf
46Safaricom Business to Consumer (Bulk Payments Services) http://www.safaricom.co.ke/index.php?id=270

According to the Freedom from Fistula Foundation, the role of mobile phones in enabling emergency interventions cannot be downplayed – from the initial contact with FFFF officials through a beep or 'flash', or a "call me back' SMS text, to the interview on the phone with a person on the other side of the line who is willing to listen and help, the process is characterized by constant communication and social exchange which helps increase empathy.

The Freedom from Fistula Foundation's (FFFF) executive director said that trust is a big issue in fistula repair as sometimes the affected women have gone to hospitals and been told they can live with fistula yet repair is possible. Some have had it for 30 years and are brought to hospital by the child they were giving birth to, said the executive director. FFFF ambassadors, comprising past patients, help in publicizing the programme, a process which boosts the confidence of potential beneficiaries' most of whom being from remote locations are even afraid to travel to Nairobi on their own to seek treatment.

> Fistula is more stigmatized when due to misinformation; it is linked to other taboo conditions such as HIV/AIDS, abortion and infertility.
>
> **Human Rights Watch**

FFFF uses past beneficiaries as goodwill ambassadors to help in reaching out and providing hope to affected and stigmatized women in their communities.

FFFF's executive director said: "The greatest success is to see a woman who previously had no life in her eyes become dry and feel like a woman again."

As obstetric fistula is characterized by incontinence, women often are forced to hide shunning social interaction. There is a lot of stigma around fistula. Most women suffering obstetric fistula are ostracised by their families and communities as they smell and are constantly wet, leaving them to live as outcasts. Cases of men abandoning their wives and remarrying due to fistula are common. Lucy Karimi* (not her real name) , from the eastern region of Meru, who underwent a successful fistula repair surgery at the Jamaa Mission Hospital in Nairobi told IRIN47: "Even telling people about my experience is embarrassing; I would be standing and discover my shoes full of faeces."

47KENYA: Fighting the misery of fistula http://www.irinnews.org/report.aspx?ReportID=89165

Like other FFFF beneficiaries Karimi schedules her follow-up hospital visits to coincide with other women from her community who need to be introduced to the fistula emergency repair service. "I was hoping to come with one of them today during my final [medical] review. I feel sorry for her because she got the condition while giving birth to twins: she really needs help," Karimi said.

According to the UN Population Fund48, fistulas occur among women living in poverty or in cultures where status and self-esteem depend almost entirely on marriage and the ability to bear children. With successful repair women are able to participate again in meaningful socio-economic activities.

In many ways, the mobile phone is helping lessen the feeling of helplessness and isolation common during emergencies and disasters. Mobile phone calls help provide the human contact that can be reassuring for a person caught up in a distressing situation. According to a military officer with the NDOC, it would be of great help if the population would be in a position to call for help in case of an emergency or an actual disaster. The lack of timely and accurate data is often an obstacle in appropriately managing disasters but mobile technology is gradually helping fill this gap.

According to the then communications manager with the Kenya Red Cross Society, mobile phones have increased the speed of communication and feedback between two parties. "Mobile phones have put a face to those we serve as we can hear and understand their feelings. Mobile phones have helped resolve some disputes faster before exploding into humanitarian crises. Institutions can now plan meetings and coordinate activities via mobile phone better than [through] memos and meetings," he said.

Mobile phones are helping to lessen isolation. "Mobile phones have put a face to those we serve as we can hear and understand their feelings," he added.

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48 UNFPA End fistula campaign http://www.endfistula.org/

CHAPTER FIVE

FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This study on how mobile phones can and are being used in emergency and disaster management in Kenya sought to describe from selected organizations' perspectives:

1) The forms of usage of mobile phones in emergency and disaster management in Kenya.
2) The reasons for the adoption of mobile phones in emergency and disaster management.
3) The operational and socio-cultural challenges in integrating mobile phones in emergency and disaster management.
4) The social capital effects of integrating mobile phones in emergency and disaster management

5.1.1 The forms of usage of mobile phones in emergency and disaster management in Kenya

From the data collected, it was established that mobile phones are mainly being used in disaster preparedness through fundraising, and in response in the form of cash transfers and for the facilitation of emergency support. Through Safaricom's M-PESA cash transfer service, the NGO Concern Worldwide was able to help a food-insecure community meets its nutrition needs.

M-PESA is also helping the Kenya Red Cross in its fundraising activities which help the organization to be better prepared for disasters through availing funds to enable it preposition food and non-food supplies in potential need areas for timely response in the case of devastating quick onset disasters.

Mobile phones also serve as awareness creation tools, as the first line of contact between potential beneficiaries who make that all-important call to FFFF- Kenya or the NDOC, or the Kenya Red Cross Society, while the organizations facilitate the provision of care, or emergency rescue services.

It is through the mobile phone, for example, that FFFF officials are able to conduct 'a needs evaluation' of sorts with potential beneficiaries through a series of questions asked over a mobile hotline to establish fistula symptoms, such as leaking urine. Mobile phones are also the appointment-making and follow-up tools through the process of treatment for fistula patients comprising travel from remote towns to the hospital in Nairobi, provision of transport money for those in need of it to follow-up care.

5.1.2 The reasons for the adoption of mobile phones in emergency and disaster management

Mobile phone technology is transforming how aid works in innovative ways. While high initial start-up costs, to meet the price of buying mobile phone handsets, chargers and SIM cards for example, were found to be a challenge in the Concern Worldwide case study, an evaluation of the project found the use of the M-PESA cash transfer service to be cheaper and more secure than traditional food distribution.

Cash transfers, via mobile phone, also enabled beneficiaries to set their own priorities with regard to meeting their food needs, which was important in creating a sense of community ownership and support for the project. The placing of mobile phone technology in the hands of community members who previously had low access to the same also had empowering spin-off benefits as is described in the social capital section of the summary of findings.

The role of beneficial partnerships and networking in increasing project effectiveness was also exemplified in the relationship between Concern Worldwide and Safaricom. The same is also true in other telecoms/NGO partnerships. These private-public partnerships help demonstrate that stakeholders can work together while retaining their core business values.

Mobile phones provide instant reach and are capable of enabling virtually instantaneous responses; only the participants determine any delay in response – this invaluable in disaster and emergency management.

While mobile phones are not actively being used to create awareness in emergency and disaster management, this is often a spin-off effect of placing the technology in the hands of remote communities. This is illustrated in the Concern Worldwide case study whereby project beneficiaries were able to warn each other of impending cattle rustling attacks.

In the Kenya Red Cross example, officials are better placed to communicate and more effectively coordinate disaster response activities due to the use of mobile phones.

At the National Disaster Operations Centre, the role of mobile phones could be even greater if there was more awareness of the centre's hotline numbers. On helping women with fistula, mobile phones not only initiate communication with affected women but also facilitate the beneficiary targeting and follow-up role. Mobile phones indeed are creating a new means of communicating with disaster and emergency affected populations and allowing disaster managers to better communicate with each other.

5.1.3 The operational and socio-cultural challenges in integrating mobile phones in emergency and disaster management

Literacy and awareness challenges were a recurrent theme in the case studies. In the Concern Worldwide project some of the women who had been targeted as beneficiaries were not able to access the M-PESA cash transfer service due to a lack of national identification documents, necessary for such transactions, the service is also run on an SMS-based platform broadcast in the English and Kiswahili languages. In the Freedom From Fistula programme, the lack of awareness that fistula is treatable due to low literacy levels, lack of access to health care and communication services, were also found to be challenges.

The misuse of mobile phones as in prank calling was also identified as a challenge by the National Disaster Operations Centre and the Freedom from Fistula case studies.

There is also a low-level of integration of mobile phones and other Information Communication Technologies in the day to day running of most disaster and emergency management operations. According to the Kenya Red Cross Society and the National Disaster Operations Centre, there is a need for more investment in such technologies to help also in meeting related training needs, as new technologies often mean new training needs. The reluctance to embrace such technologies despite the potential they offer is also an issue.

5.1.4 The social capital effects of integrating mobile phones in emergency and disaster management

The provision of mobile phones to some of the beneficiaries in the Concern Worldwide project was found to reduce their isolation allowing them for example, to warn each other of impending cattle rustling attacks. Community members could also obtain information on where to buy food with the cash transfers empowering them to prioritize how to spend the money based on their individual household needs. Mobile phones are enabling people in remote locations to ask for and to receive help, said a military officer with the NDOC, Major. Jason Nyandege.

This 'tapping someone on the shoulder' is further exemplified by responses to phone beeps and flashbacks in the Freedom From Fistula case study whereby potential beneficiaries are assured of a listening ear and possibly free corrective surgery. Past fistula survivors are also helping those suffering from the condition within their localities by accompanying them to seek care thus helping to provide a solution to this community problem.

The integration of mobile phone technology in emergency and disaster management was also found to contribute to the sense of community in the Concern Worldwide example whereby beneficiaries had to interact closely with each other and even with police officers.

Aid agencies are also using mobile phone technology to meet crises' affected populations' need to contact relatives. People in safe places who are worried about missing cousins, and crises' survivors in desperate need of support from the extended family, make use of such facilities whose purpose is to reunite friends and relatives.

This was found to be true in the case of the Kenya Red Cross Society (KRCS) whose family links service helps in reuniting families separated during disasters, according to the then KRCS Communications Manager. By so doing mobile phones play a latent function in helping 'reconnect' isolated individuals with the outside world'.

It is worth noting that while mobile phones and other forms of social media daily offer new opportunities in disaster management by reshaping how humanitarian workers and the people they serve interact, the role of face to face communication remains vital, notes a Voice of America report[49]. In the Concern Worldwide case study, for example, initially there was some reluctance to embrace mobile-phone-based cash transfers as opposed to the traditional food aid with the local NGO partner seeking to maintain this one-on-one contact.

The high level of poverty amongst women, especially in remote rural areas, undermines their role in development and socio-economic transformation. In the Concern Worldwide pilot, some of the targeted women beneficiaries were not reached due to low or lack of literacy yet the project aimed at helping empower women by putting the money transferred into their hands to determine household purchases.

5.2 Conclusion

Mobile phones are being used in all the phases of disaster and emergency management but the usage is more apparent in response and in facilitating the same. With mobile phone availability in the developing world growing at a rapid rate, at about 63.2 percent phone ownership in Kenya, according to the 2009 census, it is expected that those who receive humanitarian assistance, or might be likely to do so in the future, are also likely to have access to mobile technology.

As well as such emergent spread of mobile technologies, there are increasing numbers of projects such as those described in this study, which are actively either placing mobile technologies in the hands of aid recipients or seeking innovative ways of utilizing the devices.

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[49]VOA news - Brave New Communications World - http://www.voanews.com/english/news/digital-frontiers/

With disaster relief being described as a giant logistical operation, today's emergency responders cannot afford to dispense with mobile phones as the devices are increasing the flow of information and the speed at which it is being processed. While, we cannot stop disasters and emergencies from happening, mobile phones can help make us better at warning people in advance; and when disasters occur, at quickly helping to restore vital communications.

Mobile phones provide emergency agencies with a relatively cheap and readily available medium for the exchange of information and conversely recipients of aid have the possibility to share their needs and views more readily. Harnessed effectively, this has the potential to change the nature and scope of beneficiary engagement and participation in programme implementation, with knock-on effects on aid quality and accountability.

The Concern Worldwide project, demonstrates that even in the most remote areas where mobile penetration and literacy levels are relatively low, there are still opportunities offered by mobile technology. Mobile phones are simple and easily available technologies as part of high quality and innovative programming, which can lead to improved performance, sustained impacts and greater empowerment within communities.

Mobile short codes, often four digit codes, such as those used by the Kenya Red Cross Society for fundraising, are increasingly being used as part of an emergency appeal, as was the case after the 2004 Indian Ocean tsunami. The short codes make the digits easier to remember.

However, as Christian Kreutz in SMS Uprising: Mobile Phone Activism in Africa, notes, there remains many technological and infrastructural challenges to the optimal use of mobile devices such as low-cost phones with few features, which makes internet integration very much a thing of the future. Airtime costs still remain high enough to present obstacles.

Other challenges include delays in getting mobile phone-based projects set up, convoluted mobile texting procedures, and literacy issues. This is because equipment is expensive and creates co-ordination problems of its own.

Despite this, mobile phones are increasingly being used to target women and other vulnerable populations for empowerment. Making mobile phones cheaper and more accessible to such population segments would go a long way towards ensuring that they benefit as intended.

Mobile phone-based technologies are helping illustrate that people affected by a catastrophe are not necessarily helpless or hapless, according to a Voice of America report, entitled A Brave New Communications World. In future, adds the report, it is expected that beneficiaries of emergency aid will use technology to tell aid agencies of their needs be it cash or food and track its arrival, all via mobile devices.

5.3 Recommendations

Mobile phone systems should be incorporated as part of regular emergency preparation programmes in Kenya instead of just in quick one-off response programmes for greater effectiveness and sustainability. As Kinkade and Verclas note in their 2008 report, most mobile phone-based projects are short-term and groundbreaking although the potential to scale and replicate them is significant. The challenge is on sustaining the 'eureka' moment as innovation is happening daily on the ground, according to the 2009 ALNAP 8th review of humanitarian action performance, impact and innovation.

Researchers should also look into innovative ways of using mobile phones more pro-actively in disaster management in Kenya. At present, majority of the applications using mobile phones in emergency and disaster management are in response/reconstruction related activities as well as emergency fund-raising but there exists opportunities in early warning. In Haiti, for example, the International Federation of the Red Cross (IFRC) and the Haiti Red Cross Society in late October 2012 sent out warning messages using SMS during Hurricane Sandy. Messages warned people to stay vigilant, listen to the radio and call 733 – the IFRC integrated voice response system, according to an IFRC articled entitled, Haiti braces for the arrival of Hurricane Sandy. The integrated voice response system allows people to access information on what precautions they can take during and after a storm.

Mobile network connectivity problems and a lack of electricity and other communication infrastructure in remote parts of Kenya should also be addressed to enable the communities there to ask for, and to receive timely help, during emergency situations.

Early public warning is also essential in ensuring that hazards do not become disasters or that in the case of disasters occurring, the overall effect is mitigated. The Philippines government for example, has launched a mobile phone application which can provide real-time information on rainfall and flooding to the general public, notes an IRIN news report entitled, Mobile phone app could help disaster preparedness. Mobile phones in Kenya too can help to enhance early warning systems to common disasters such flooding.

The above photo, by IRIN News, shows a school submerged by past flooding in the Budalangi area of Western Kenya. The Budalangi region faces a perennial threat of flooding when the River Nzoia, which is fed by highlands upstream, breaks its banks. A reliable early warning system, accessible to Budalangi residents via the mobile phone for example, could help to reduce vulnerability there as a long-term solution is sought.

As mobile phone technologies gain prominence in day to day applications, there is a need to place more of such devices into the hands of remote Kenyan communities' through a further lowering of handset costs – this can help to overcome some of the challenges posed by the high start-up costs of humanitarian projects utilizing the technology. An increase in the affordability of mobile phone handsets, with integrated features such as cameras and Global Position Systems, to attach coordinate data with each text message, for example, can also mean more precise and timely assistance to those most in need of help.

Related to the above is crowd-sourcing , the combined power of mobile phones, mapping technology and social networking which can enable citizens in crisis to seek help, facilitate aid deliveries, bear witness to abuses and hold governments and aid agencies more accountable, which should increasingly be embraced in Kenya.

The past head of the UN Office for the Coordination of Humanitarian Affairs in Kenya, Jeanine Cooper, wrote in a Facebook article[50]: "We've learned that limiting our information sources to just a few officials or agency heads is… well, limiting…Getting information on what is happening from the wananchi [the general public] who are experiencing it, passing it to the various authorities who can respond, well that is at the core of coordination… A system of SMS and web-based alerts and updates will reduce the need and frequency of [humanitarian agency] meetings while allowing for effective and swift response."

In an interview[51] with the Integrated Regional Information Networks, Andrej Verity, an information management officer with the UN Office for the Coordination of Humanitarian Affairs, further puts this into perspective. "Imagine if a short code [special four-digit phone number] was already established, the website set up, and processes to handle the information defined [before an emergency]. When something strikes, the people, and government, would know how to use the system - no sales job required. At that point, we would have a great 'early assessment' of the situation because people could be SMS-ing almost from time zero. I know that many would be very hesitant to call such an approach an official assessment, but it could be used to help identify what could be the worst affected areas and then organizations could target verification assessment missions in these locations," states Verity.

Mobile phone initiatives provide great opportunities for social impact. For example, physical access to mobile phones is greater compared to computers among local remote communities. Mobile technologies should thus be utilized to increase connectivity with even the remotest communities. This is because of the crucial role played by local communities in the whole scope of emergency and disaster management and its emergent technologies. Local communities, for example, are the first responders when disasters strike and they are the ones who are left behind long after the external responders are gone.

Seven humanitarian lessons for the referendum in Kenyahttp://www.facebook.com/note.php?note_id=136848219684092
IRIN: Using SMS to pinpoint humanitarian needs http://www.irinnews.org/Report.aspx?ReportID=90602

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APPENDIX

The study utilized both primary and secondary data sources.

The primary data was obtained through key informant interviews with officials of the Kenya Red Cross Society, the NGO Concern Worldwide, the Freedom From Fistula Foundation and the National Disaster Operations Centre.

Secondary data sources, including organizational reports and other relevant literature were also referred to, to establish what is known about the forms of usage of mobile phones in emergency and disaster management in Kenya, the reasons for the adoption of mobile phones in emergency and disaster management in Kenya, the operational and socio-cultural challenges of the same as well as the social capital effects.

Interview Schedule

Briefing

My name is Ann Nyaruai Weru, a Masters student at the University of Nairobi. I am currently undertaking a research project in Sociology at the University and I thought it would be a good idea to interview you, so that I can be better informed on how your organization is using mobile phones to manage emergencies and disasters. I would like to ask you some questions on the same; I hope to use this information as part of my research project. Are you available to respond to some questions at this time?

Interview questions (See Organization Questions in Appendix)

Closing

I appreciate the time you took for this interview – Would it be alright to get in touch with you again if I have further questions?

APPENDIX I

Concern Worldwide Interview Questions

Concern Worldwide is an international humanitarian organization whose programmes include emergency response among vulnerable communities in countries prone to disaster. Concern Worldwide has used a mobile phone-based cash transfer programme to respond to food insecurity in one of its emergency intervention programmes.

- How did Concern Worldwide use mobile phones to help address food insecurity?

- Why did your organization opt for a mobile phone-based cash transfer programme instead of the more traditional food aid deliveries to respond to food insecurity?

- How did your partners on the ground react to your use of mobile phones to help address food insecurity? Did they embrace the use of the technology, explain?

- Who were your target beneficiaries and were you able to meet their needs through the cash transfers?

- What were some of the challenges encountered in this use of mobile phones? What were some of the operational challenges, if any, to your deployment of the mobile phone technology on the ground and how did you address these hurdles? Did you face any other socio-cultural challenges?

- How did the beneficiaries react to your use of mobile phones to help them compared to the more tangible food aid that they were accustomed to in the past?

- What was the social impact of placing mobile phones into the hands of the target group? What were some of the social effects, the spin off benefits of this use of mobile phones on the beneficiaries?

- Assessing your intervention which integrated mobile phone technology to respond to food insecurity, what would you say were the main lessons learned?

- Does your organisation plan on using mobile phones this way again, why, or why not?

APPENDIX II

Freedom From Fistula Foundation-Kenya Interview Questions

The Freedom From Fistula Foundation, is a charity organization that helps women suffering from obstetric fistula, which is caused by obstructed childbirth, to receive free surgeries. Mobile phones help to facilitate access to this crucial emergency service.

- How is the Freedom From Fistula Foundation (FFFF) using mobile phones in fistula emergency care?

- Why mobile phones, and when did you start using them this way?

- At what stages of your emergency assistance do you find the use of mobile phones to be especially useful?

- What are some of the challenges in this use of mobile phones?

- How have your partners in providing this emergency relief reacted to your use of mobile phones in your emergency intervention?

- What has been the reaction of the beneficiaries of your emergency intervention to your use of mobile phones to assist them receive fistula care?

- What have you found to be some of the challenges in using mobile phones this way?

- What kind of social impact would you say this use of mobile phones has? What social effects would you say your use of mobile phones this way is having on the beneficiaries of your emergency interventions?

- Do you intend to keep using mobile phones this way again, why/ why not? What have been some of the lessons learned going ahead?

APPENDIX III

The Kenya Red Cross Society (KRCS) Interview Questions

The Kenya Red Cross Society (KRCS) has an emergency operations centre at its Nairobi headquarters which links up its various offices via high frequency and very high frequency radio equipment, mobile phones and the internet.

To enable the organization coordinate emergency response. KRCS has dedicated mobile phone hotline numbers, which have been allocated to key officers handling disaster management. The organization is also using mobile phones for emergency and disaster fundraising.

- Besides using mobile phones to enhance communication between your various field offices and the headquarter with regard to emergencies and disasters, why is the Kenya Red Cross Society using mobile phones in emergency and disaster management?

- What prompted the organisation to start using mobile phones in emergency and disaster fund raising, for instance?

- What opportunities do you feel there are in using mobile phones in emergency and disaster management? Are there other ways you feel KRCS and other humanitarian organizations should be using mobile phones that they are currently not doing?

- What impact has the integration of mobile phones had on your work and on the people you serve?

- What challenges would you say exist in the integration of mobile phones in emergency and disaster management activities?

- What have been the key lessons learned in using mobile phones in emergency and disaster management?

APPENDIX IV

National Disaster Operations Centre Interview Questions

The National Disaster Operations Centre (NDOC) works in coordination with local community based organizations, district and provincial disaster management committees and other humanitarian actors delegating duties to stakeholders so that they know who does what in case of an emergency. Besides being reachable to district administration officials via mobile phones to offer support to the public in case of emergencies and disasters, the NDOC also conducts regular disaster sensitization campaigns.

- Kindly provide a brief background of NDOC's use of mobile phones in emergency and disaster management, and explain what prompted the organization to integrate mobile phones into its operations.

- What have you found to be some of the challenges in using mobile phones this way, for example, does the public know that there are mobile numbers that they can reach the NDOC on to report emergencies or disasters?

- And how likely are you, as NDOC officials, to act on information relating to disasters and emergencies that is sent to you by the public via mobile phones?

- What is the process towards facilitating a response after receiving a mobile phone SMS alert for example of an oil tanker fire emergency from the public?

- What can be done to increase the effectiveness of emergency response coordination efforts that are utilizing mobile phones?

- What are some of the challenges in your organization's use of mobile phones in emergency and disaster management?

- What desirable or undesirable social effects have you recorded relating to the public being able to reach you via mobile phones for emergency support?