

Mobile Communications: M-Crime and Security

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Declaration of Authorship

I, Elizabeth Stones, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed:

A handwritten signature in black ink that reads "E. Stones". The signature is written in a cursive style with a large, looped 'E' and a trailing flourish.

Date:

5th June 2017

Abstract

The dramatic growth of mobile communications creates many opportunities for previously disconnected populations to enhance their access to information and resources during periods of crisis, particularly where formal services are weak. While numerous studies have lauded the potential benefits of mobiles, the potential security and crime risks and benefits associated with mobile ownership and use have been largely overlooked.

This thesis is concerned with understanding the relationship between crime, the security of developing world populations and the increasing penetration of mobile telephony. The aim is to explore the security-enhancing and crime-inhibiting benefits, and identify and analyse the crime and security threats, associated with mobile phones in developing world settings. The study findings are used to examine whether crime opportunity theories such as routine activity theory can be fruitfully applied to examine the relationship between mobile telephony and constellations of motivated offenders, suitable targets and capable guardians in developing world settings. Specifically, it examines the ways in which mobile phones inhibit crime in developing world settings by increasing the perceived effort and risk, reducing the rewards and provocations, and removing excuses for crime. It then addresses how mobile phones create opportunities for crime in developing world settings, investigating the social and situational conditions which contribute to these crime opportunities through reducing the perceived effort and risk, increasing the rewards and provocations, and contributing to excuses for crime. To support the development of theory, the study utilises primary data collection from two case studies: Kenya and Uganda. These include interviews with relevant stakeholders, focus group discussions and qualitative and quantitative surveys with mobile phone owners, users and non-users.

The findings reveal user perceptions of a range of security and crime benefits and threats associated with mobile telephony. These are subsequently examined and classified through opportunity and situational crime analysis and associated prevention techniques. Mobile phones are found to inhibit crime in developing world, primarily through enhancing the perceived risk associated

with the commission of crime. However, formal uses for crime reporting and detection remain limited, with the majority of users reliant on informal social networks for support during periods of insecurity. Mobile phones also create new opportunities for crime in resource-poor contexts, both as *crime targets* and *crime facilitators*. A range of social, cultural and situational conditions are also found to inform opportunities for crime and crime prevention in developing world settings. A preliminary categorisation of crime and security threats associated with mobile telephony in the two case studies is developed, and the new category of 'm-crime' is proposed to incorporate, "*any illegal or anti-social activity facilitated or committed using mobile telephony*". Situational crime prevention (SCP) techniques are applied to address opportunities and criminogenic conditions that foster the commission of m-crimes in developing world settings, categorise prevention mechanisms according to effort, risk, reward, provocation and excuses, and propose further techniques using the 25 techniques framework. Opportunity prevention techniques characterising IN SAFE HANDS (Whitehead et al., 2008) are also applied to the prevention of handset theft.

Specific methodological challenges associated with the collection of data on perceptions of security in resource-poor, developing world settings are identified. These include limitations of the focus group method in contexts where group dynamics are characterised by inequalities of power which constrain participation, cultural restrictions on expressing dissent and their implications for Likert scale survey responses, and logistical challenges associated with obtaining suitable venues in contexts where privacy is limited and settings do not meet the basic requirements of traditional data collection instruments. Finally, theoretical and practical applications and implications of the study findings are addressed. In particular, the study addresses the applicability of opportunity theories of crime and situational techniques of crime prevention to mobile phones in developing world contexts.

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Table of Contents

Declaration of Authorship.....	2
Abstract.....	3
Acknowledgments.....	5
Table of Contents.....	6
List of Tables.....	13
List of Figures	14
List of Acronyms	17
Chapter One: Introduction.....	18
1.1 Background of the study	18
1.2 Statement of the problem	20
1.3 Aims of the study	21
1.4 Analytical framework.....	22
1.5 Significance of the study.....	23
1.6 Research design.....	25
1.7 Limitations of the study	26
1.8 Definition of terms.....	27
1.9 Organization of the thesis	28
Chapter Two: Mobile telephony and crime in the developing world	32
2.1 Introduction.....	32
2.2 Mobile telephony in the developing world	33
2.2.1 Scope and scale of mobile penetration.....	34
2.2.2 Patterns of ownership and use	38
2.2.3 Mobilising social networks	44
2.3 Mobile phones and user security	48
2.3.1 Mobile phones and economic security.....	49
2.3.2 Mobile phones in emergencies.....	51

2.3.3 Mobile phones and disorder	55
2.4 Mobile telephony, security and crime prevention	58
2.4.1 Mobile phones enable crime reporting.....	58
2.4.2 Responsibility for security and crime prevention	60
2.4.3 Mobile phones, security and surveillance	63
2.5 Conclusion.....	67
Chapter Three: Frameworks of Analysis	68
3.1 Introduction.....	68
3.2 Opportunity theories of crime and mobile telephony.....	69
3.2.1 The general theory of crime.....	69
3.2.2 Opportunity theories of crime	70
3.2.3 Rational choice	71
3.2.4 Routine activity theory	72
3.2.5 Crime facilitators.....	77
3.2.6 Process of socio-technical change and crime opportunities	79
3.2.7 Crime in networked environments	82
3.2.8 Crime targets as <i>CRAVED</i>	83
3.3 Opportunity theory and crime prevention.....	86
3.3.1 Situational crime prevention	88
3.3.2 Techniques of SCP.....	89
3.3.3 SCP techniques to reduce offending in digital spaces.....	92
3.3.4 SCP techniques to reduce handset theft	96
3.3.5 Crime displacement and offender adaptation	98
3.3.6 Responsibility for preventing crime associated with mobile phones	100
3.4 Conclusion.....	101
Chapter Four: Method.....	102
4.1 Introduction.....	102
4.2 Aims of the Study.....	102

4.3 Researching mobile phone crime in the developing world.....	103
4.4 Research design.....	104
4.5 Selected methods.....	109
4.5.1 In-depth interviews.....	109
4.5.1.1 Interview Guide.....	112
4.5.1.2 Limitations.....	112
4.5.2 Focus Group Discussions.....	113
4.5.2.1 Sampling Method.....	115
4.5.2.2 Procedures.....	116
4.5.2.3 FGD Tool.....	118
4.5.2.4 Limitations.....	120
4.5.3 Survey.....	121
4.5.3.1 Sampling Method.....	121
4.5.3.2 Local Research Assistants.....	123
4.5.3.3 Procedures.....	126
4.5.3.4 Survey Instrument.....	129
4.5.3.5 Limitations.....	130
4.6 Case Study Design.....	132
4.6.1 Kenya.....	134
4.6.2 Profile of study participants in Kenya.....	136
4.6.2.1 Survey.....	136
4.6.2.2 Focus Groups.....	139
4.6.2.3 Interviews.....	140
4.6.3 Uganda.....	141
4.6.4 Profile of study participants in Uganda.....	141
4.6.4.1 Survey.....	141
4.6.4.3 Focus Groups.....	144
4.6.4.2 Interviews.....	145

4.7 Data Analysis.....	145
4.8 Research Ethics.....	146
4.9 Conclusion.....	147
Chapter Five: Kenya	148
5.1 Introduction.....	148
5.2 Mobile telephony, crime and security in Kenya.....	148
5.2.1 Mobile phones and crime	148
5.2.2 The prevention of mobile phone crime	151
5.2.3 Mobile phones for crime prevention.....	156
5.3 Research findings.....	157
5.3.1 Security benefits of mobile phones: reducing crime	158
5.3.1.1 Typology of security benefits.....	158
5.3.1.2 Crime reporting and crime prevention	162
5.3.2 Mobile phones, insecurity and crime	164
5.3.2.1 Hate-speech.....	165
5.3.2.2 New crime opportunities.....	179
5.3.3 The prevention of mobile phone crime	181
5.3.3.1 Peace SMS and the de-escalation of violence	181
5.2.2.2 SIM Registration.....	184
5.3.3.3 Prosecution and deterrence	192
5.4 Conclusion.....	192
Chapter Six: Uganda.....	194
6.1 Introduction.....	194
6.2 Mobile telephony, crime and security for migrants in Uganda	194
6.2.1 Refugees and migrants in Uganda	195
6.2.2 Displacement and mobile phones	196
6.2.3 Mobile connectivity and risks for migrants	199
6.3 Research findings.....	200

6.3.1 Mobile phone ownership and access among participants in Uganda	200
6.3.2 Security benefits for displaced populations	204
6.3.2.1 Mobile phones and personal security	204
6.3.2.2 Security benefits during emergencies	210
6.3.2.3 Crime reporting and crime prevention	213
6.3.3 Crime and security threats identified in Uganda	217
6.3.3.1 Threats and violence	219
6.3.3.2 Fraud and financial scams	221
6.3.3.3 False information	225
6.3.3.4 Theft of handsets	227
6.3.4 The prevention of mobile phone crime	227
6.4 Conclusion	232
Chapter Seven: Discussion	233
7.1 Introduction	233
7.2 Mobile phones inhibit crime in developing world settings	234
7.2.1 Mobile phones increase the perceived effort of crime	238
7.2.2 Mobile phones increase the perceived risk of crime	238
7.2.3 Mobile phones reduce the rewards of crime	244
7.2.4 Mobile phones reduce the provocations for committing crime	244
7.2.5 Mobile phones remove excuses for crime	246
7.3 Mobile phones create opportunities for crime in developing world settings	247
7.3.1 Mobile phones reduce the effort of crime	248
7.3.2 Mobile phones reduce the risk of crime	249
7.3.3 Mobile phones increase the rewards of crime	250
7.3.4 Mobile phones provoke crime and remove excuses	254
7.4 Social, cultural and situational conditions inform opportunities for crime and crime prevention	256

7.4.1 Resource-poor settings	256
7.4.2 Language, literacy and meaning	261
7.4.3 Social networks	262
7.4.4 Handset sharing	264
7.4.5 Gender	266
7.4.6 Attitudes to the state and the law	266
7.5 M-crime: A new crime category	270
7.5.1 Handset theft	273
7.5.2 M-violence	273
7.5.3 M-theft	274
7.5.4 M-deception.....	275
7.6 The prevention of handset theft and m-crime in developing world settings	275
7.6.1 Situational prevention of handset theft in developing world settings	276
7.6.2 Applying IN SAFE HANDS prevention strategies to mobile phone theft in developing world settings	281
7.6.3 Preventing the use of mobile phones as crime facilitators.....	286
7.6.3.1 Increase the effort	289
7.6.3.2 Increase the risk.....	290
7.6.3.3 Reduce the rewards and provocations	293
7.6.3.4 Remove excuses.....	294
7.6.3.5 Displacement and adaptation.....	296
7.6.4 Responsibilities and capacities for preventing crime associated with mobile phones in developing world settings	297
7.7 Researching crime across cultures.....	298
7.7.1 Data collection and adaptability in resource-poor settings.....	299
7.7.2 Research methods in non-Western contexts.....	301
7.7.3 Recording responses as a source of bias.....	305
7.7.4 Generalising from the study sample	306

7.7.5 Survey format and question design	310
7.7.6 Translation and (mis)interpretation	311
7.7.7 Building relationships with organisations	313
7.7.8 Lessons for future research	314
7.8 Conclusion	316
Chapter Eight: Conclusions.....	317
8.1 Introduction.....	317
8.2 Contributions of the study	317
8.3 Limitations of the study	320
8.4 Theoretical implications of the study.....	322
8.5 Practical implications of the study.....	327
Bibliography	331
Appendix 1: Communications Survey Kenya	357
Appendix 2: Communications Survey Uganda.....	363
Appendix 3: FGD Tool Kenya	368
Appendix 4: FGD Tool Uganda	370
Appendix 5: Transcripts of recorded interviews with survey administrators in Kenya.....	372
Appendix 6: Research Assistant Training Session Outline	391
Appendix 7: Participant Information Sheets	393
Appendix 8: Interview Transcripts Kenya.....	394

List of Tables

Table 1: 25 Techniques of SCP (drawing on Cornish & Clarke 2003)	90
Table 2: Interview discussion themes in Kenya	112
Table 3: Interview discussion themes with local research assistants in Kenya	112
Table 4: FGD Topics in Kenya	119
Table 5: FGD Topics Uganda	120
Table 6: Profile of FGD participants in Naivasha, Kenya	139
Table 7: Profile of FGD Participants in Nakuru, Kenya	140
Table 8: List of interviewees in Kenya.....	140
Table 9: List of interviewees in Uganda	145
Table 10: Data Analysis of Different Methods	145
Table 11: Threatening SMS reported by Kenya survey respondents in 2013 election period.....	169
Table 12: Sources of violent and threatening messages during 2007 according to survey respondents in Kenya.....	177
Table 13: Reasons for attitudes to SMS monitoring provided by Kenya survey sample	186
Table 14: Mechanisms through which mobile phones reduce opportunities for crime in developing world settings	237
Table 15: Categorising crime threats, targets and associated crime threats related to mobile phones in developing world settings.....	272
Table 16: Preliminary application of the 25 techniques to reduce opportunities for handset theft in developing world settings	277
Table 17: Application of IN SAFE HANDS characteristics of secure design, drawing on Whitehead et al. (2008, p42) to mobile handset theft in developing world settings	283
Table 18: Preliminary application of the 25 techniques to reduce the use of mobile phones as crime facilitators in developing world settings	288

List of Figures

Figure 1: Mobile penetration per 100 inhabitants in the developed and developing world (ITU, 2015)	36
Figure 2: Fixed line penetration per 100 inhabitants in the developed and developing world (ITU, 2015)	37
Figure 3: Problem analysis triangle, Centre for Problem-Oriented Policing (2017)	76
Figure 4: Map of Kenya marked with data collection locations	127
Figure 5: Map of Uganda marked with data collection locations	128
Figure 6: Age pyramid of the Kenya survey sample.....	137
Figure 7: Educational profile of survey respondents in Kenya	138
Figure 8: Reported income of survey respondents in Kenya	138
Figure 9: Ethnicity of survey participants in Kenya.....	139
Figure 10: Age Pyramid of the Uganda Sample.....	142
Figure 11: Educational profile of survey participants in Uganda	143
Figure 12: Reported income of survey participants in Uganda	143
Figure 13: Country of origin of survey participants in Uganda	144
Figure 14: Feelings associated with receipt of pro-peace SMS according to survey respondents in Kenya.....	182
Figure 15: Reasons provided by study participants in Kenya for supporting or opposing SMS monitoring.....	187
Figure 16: Reasons provided by study participants in Kenya for being concerned or unconcerned about SMS monitoring	188
Figure 17: Mobile phone ownership by sex in Kampala and Kyangwali.....	202
Figure 18: Handwritten note left for the author by the roadside in Kyangwali .	203
Figure 19: Levels of agreement with the statement, "Having a mobile phone contributes to my personal security" among mobile phone owners in Uganda	205
Figure 20: Responses to survey question, "how secure would you feel in your everyday life without a phone?"	206
Figure 21: Reasons for feeling 'somewhat' or 'very insecure' without a mobile phone according to survey participants.....	207
Figure 22: Stories from Uganda on the use of mobile phones during crises...	212
Figure 23: Photograph of ARC GBV Hotline poster, taken by author in ARC HQ, Kyangwali Settlement	214

Figure 24: Degree of agreement with the statement "criminals are using mobile phones to harass and defraud people" reported by the survey sample in Uganda	218
Figure 25: Main usage of mobile telephones during crisis according to survey participants in Uganda	226
Figure 26: Participant responses to the statement "registering SIM cards will have no impact on crime" in Uganda	230
Figure 27: Attitudes to monitoring by the police, the state and by mobile network operators among participants in Uganda	231
Figure 28: Research team training and discussion of pilot survey findings, Clubhouse, Ngong Rd. Nairobi	Error! Bookmark not defined.
Figure 29: Training the research team in Kenya .	Error! Bookmark not defined.
Figure 30: Photocopying and stapling the surveys at a local print shop.....	Error! Bookmark not defined.
Figure 31: Nairobi slums, Eastleigh, where the survey was conducted	Error! Bookmark not defined.
Figure 32: Research team, Nairobi	Error! Bookmark not defined.
Figure 33: Masai in traditional costume using mobile phones .	Error! Bookmark not defined.
Figure 34: FGD Naivasha	Error! Bookmark not defined.
Figure 35: FGD Nakuru.....	Error! Bookmark not defined.
Figure 36: Marketplace in the Rift Valley	Error! Bookmark not defined.
Figure 37: Peace activists in Kenya	Error! Bookmark not defined.
Figure 38: Mobile phone mast and advertising on vehicles and buildings, Eldoret	Error! Bookmark not defined.
Figure 39: Research assistants in Kampala	401
Figure 40: Meeting with UNOCHA, Hoima Town.....	401
Figure 41: Kyangwali Settlement UNHCR office .	Error! Bookmark not defined.
Figure 42: FGD location, Katome.....	Error! Bookmark not defined.
Figure 43: Briefing local committee leader, Katome.....	Error! Bookmark not defined.
Figure 44: Female FGD participants, Katome.....	Error! Bookmark not defined.
Figure 45: Bishop of Malembo (and wife) with male FGD participants.....	Error! Bookmark not defined.

Figure 46: Interview with local youth leader, Kyangwali Settlement.....**Error! Bookmark not defined.**

Figure 47: Survey administration, Kyangwali Settlement ...**Error! Bookmark not defined.**

Figure 48: Poor roads and weather conditions impeded access to rural samples **Error! Bookmark not defined.**

Figure 49: Insecure temporary shelters provided to new refugees, Kyangwali Settlement..... **Error! Bookmark not defined.**

Figure 50: Mobile advertising, Kisonga **Error! Bookmark not defined.**

Figure 51: Research team and interpreters, Kisonga Church .. **Error! Bookmark not defined.**

List of Acronyms

ARC	American Refugee Committee
BCS	British Crime Survey
CCK	Communications Commission of Kenya
CDR	Call Data Record
DRC	Democratic Republic of the Congo
EISA	Electoral Institute for Sustainable Democracy in Africa
EPSRC	Engineering and Physical Sciences Research Council
GBV	Gender-based violence
GSMA	Global System for Mobile Communications Association
ICT	Information Communication Technology
ICTD	Information Communication Technology for Development
IDP	Internally Displaced Populations
IEBC	Independent Electoral and Boundaries Commission (Kenya)
IHRB	Institute for Human Rights and Business
IMEI	International Mobile Equipment Identity
ITU	International Telecommunication Union
MNO	Mobile Network Operator
NCIC	National Cohesion and Integration Committee
NGO	Non-Governmental Organisation
NSC	National Steering Committee
OPM	Office for the Prime Minister (Uganda)
RAT	Routine activity theory
SCP	Situational crime prevention
SIM	Subscriber Identity Module
SMS	Short Message Service
UNDP	United National Development Programme
UNHCR	United Nations High Commissioner of Refugees
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs

Chapter One: Introduction

Mobile phones ... are the tools that most encourage crime in the world...

Congolese focus group participant, Kyangwali settlement, Uganda

1.1 Background of the study

Mobile phone penetration is increasing rapidly in the developing world, providing unprecedented communication opportunities for traditionally disconnected populations (Aker & Mbiti, 2010; Castells, et al., 2007; Ling & Horst, 2011; Porter, 2012). Africa has experienced tremendous growth in access to mobile telephony over the past decade, with 46% of the population of Africa subscribed to mobile services by the end of 2015 (GSMA, 2016). In 2015, mobile telephones and services were attributed with generating 6.7% of GDP in Africa, equivalent to around \$150 billion USD, supported an estimated 3.8 million jobs across the continent, and raised around \$17 billion USD in taxation (ibid).

Acknowledging continuing inequalities of access and use, mobile telephony heralds a revolution in inter-personal connectivity among traditionally disconnected populations in developing world settings. One of the oft-cited benefits associated with this connectivity is the role of mobile telephony in providing instantaneous access to, and strengthening and cementing bonds between, social networks (Ling, 2004; Ling & Donner, 2009). Social networks are essential for maintaining livelihoods in the developing world (Donner, 2009) and studies of the economic impacts of mobile telephony describe relationships between mobile penetration and increased market efficiency, enhanced banking opportunities, and transformations in the economic strategies of users (Aker, 2008; Abraham, 2007; Jensen, 2007; Morawczynski, 2009; Morawczynski & Pickens, 2009; Mbiti & Weil, 2014; Overa, 2006). Mobile phones are increasingly perceived as lifelines for users around the world (Best, 2011; Coyle and Thornton, 2007; Dutton & Nainoa, 2002; Rotberg and Aker, 2013), but in contexts of information scarcity they are provide unparalleled opportunities for individuals and households to respond to economic shocks, access information, and seek emotional support during emergencies (Abraham, 2007; Aker & Mbiti,

2010; Blumenstock, et al., 2011; Jack & Suri, 2014; Overa, 2006; Porter, 2012). Studies indicate that these benefits may be particularly critical for users in weak states and conflict-affected settings (Best, 2011; Coyle & Meier, 2009; Coyle & Thornton, 2007; Morawczynski, 2009; Rotberg & Aker, 2013).

Mobile telephony is increasingly deployed to promote development outcomes and humanitarian objectives, where the ubiquity of mobile phones provides a mechanism to address the informational needs of both responders and crisis-affected populations (Coyle & Meier, 2009; Meier, 2013; Wall & Robinson, 2008; Wall, 2012). Where services are available, mobile phones also provide users with direct access to police and security forces for reporting crime and requesting assistance (Senarathne Tennakoon & Taras, 2012; Shapiro & Siegel, 2015; Shapiro & Weidmann, 2012).

In developing world settings, studies have focused primarily on the benefits associated with mobile telephony, with insufficient recognition of enhanced opportunities for crime that may be associated with these devices. There are some exceptions, particularly concerning opportunities for the organisation of violence and state repression. Mobile phones have been analysed as useful tools to facilitate the coordination of violence (Bailard, 2015; Pierskalla & Hollenbach, 2013; Shapiro & Siegel, 2015; Shapiro & Weidmann, 2012; Warren, 2015), and for the dissemination of threats and misinformation (CIPEV, 2008; Dercon & Gutiérrez-Romero, 2012; Goldstein & Rotich, 2008; Gujer, 2011; Osborn, 2008). Mobile phones also provide opportunities for the surveillance of inter-personal communications (Donovan & Martin, 2014; Human Rights Watch, 2014; Southwood, 2011). However, at the level of individual users there has been limited engagement with specific benefits and threats of mobile telephony for crime and security, a deficit that this study aims to address.

In Western settings, mobile telephony is widely associated with facilitating crime (Vander Beken and Balcaen, 2006; Farrell, 2015; Farrell et al., 2010; Felson, 2002; Hall, 2009; Harrington & Mayhew, 2001; Hoare, 2007; Mailley et al., 2008; Newman & Clarke, 2003; Wall, 2005). These include both acquisitive crimes of handset theft, more nebulous networked crimes, and the facilitation of other types of place-based crime. Little attention has been paid to the functions

of mobile phones for inhibiting crime, other than a broad acknowledgement that they enhance crime reporting opportunities. However, in Western contexts, mobile phones represent only one small component of a broad communications ecosystem characterised by widespread ownership and use of communication tools. These include televisions, radios, personal desktop computers, laptops, tablets, smartphones, and fixed line telephone services, among others. In many developing world contexts, mobile phones provide connectivity for *previously disconnected populations* in settings characterised by *information scarcity*. In such contexts, users may lack access to other types of communication technologies, and thus mobile phones create different constellations of opportunity for crime and crime prevention.

As mobile penetration rates increase, mobile communications are becoming available to even the most disadvantaged, and potentially the most vulnerable, populations around the world. Furthermore, the majority of developing world users are 'leapfrogging' other forms of communication technology such as fixed line services (Castells, et al., 2007; Sharma & Gillet, 2014). These inexperienced users of mobile phones may be particularly vulnerable to potential threats associated with mobile telephony. While providing many social, economic and political functions for developing world users, it is proposed that the increasing availability of mobile phones simultaneously creates new opportunities for crime and crime prevention, and that developing world users may experience distinct vulnerabilities to these emerging crime threats.

1.2 Statement of the problem

The transformations in personal communicative capacities associated with mobile telephony provide both challenges and opportunities for academic research. Literature on mobile phones in Africa becomes out-dated rapidly as technologies, applications, and patterns of ownership and use evolve, leading scholars to describe the topic as a 'moving target' (Donner, 2010; Ling, 2012; Porter, 2012). Researchers are afforded unprecedented opportunities to study the diverse impacts of mobile phones during this historical period of profound communicative transformation (Baym, 2010; Ling & Horst, 2011; Ling & Donner, 2009). This dynamic and evolving context is particularly critical for studies of crime and security, recognising that crime opportunities and threats evolve in response to changing situational conditions. It is therefore a valuable area of

study within the current period of rapid and widespread technological change in the developing world.

This study proposes that an important corollary of increasing mobile phone penetration in the developing world is the associated implications for crime and security. These include both crime facilitating, and crime inhibiting, opportunities. Mobile phones provide new crime targets and can facilitate a range of traditional and networked crimes. Understanding the conditions and contexts in which the security enhancing and crime inhibiting potentials of mobile telephony can be maximised, while the security-reducing and crime-facilitating impacts are constrained, is essential to reduce misuse and increase security benefits associated with these increasingly widespread interpersonal communication networks.

1.3 Aims of the study

This study comprises an investigation into the relationship between mobile telephony and crime and security among developing world populations. The research question is:

What are the implications of the increasing penetration of mobile phones in developing world settings for opportunities for crime and its prevention?

Specifically, it achieves the following aims:

1. Identify the ways in which mobile phones inhibit crime in developing world settings, drawing on opportunity theories of crime;
2. Identify the ways in which mobile phones create opportunities for crime in developing world settings;
3. Identify social, cultural and situational conditions informing access to opportunities for crime and crime prevention associated with mobile phones in developing world settings;
4. Identify, analyse and categorise mobile-phone related crime and security threats across the two case studies;
5. Examine the application of situational crime prevention techniques to the prevention of crime associated with mobile phones in developing world settings, specifically as *crime targets* and *crime facilitators*;

6. Gain methodological insights into the application of opportunity theories of crime and situational crime prevention to mobile phone enabled crime in developing world settings.

These aims are theoretically grounded in opportunity theories of crime and an extensive body of existing literature on mobile telephony in developing world settings. They are investigated through the analysis of primary data collected in Kenya and Uganda, in East Africa.

1.4 Analytical framework

According to opportunity theories of crime, broad processes of socio-technical change, such as the increasing penetration of mobile phones, may create opportunities for both crime and crime prevention (Ekblom & Tilley, 2000; Farrell, 2015; Laycock, 2004; Newman & Clarke, 2003). While studies have investigated the impact of the increasing availability of motor vehicles and the Internet on crime, in developing world contexts the mobile phone is the most rapid and widespread socio-technical change of the present generation. A growing body of evidence suggests that mobile phones are associated with rising rates of traditional and networked crime in Western settings, and with increasing reporting, detection and prevention (Farrell, 2015; Farrell et al., 2010; Harrington & Mayhew, 2001; Hoare, 2007; Mailley et al., 2008). Crime and security threats associated with mobile telephony are well recognised in Western settings, but this is an under-researched area of investigation in other contexts (Farrell, 2015, Sidebottom, 2015). Addressing that deficit, the argument that *opportunities for crime may foster crime* is specifically applied to primary case study data collected in Kenya and Uganda.

This study examines mobile telephony through the lens of opportunity theories of crime. Crime opportunity theories are premised on rational choice; the proposition that offenders make rational decisions in their choice of target; deciding whether to commit crimes, and when and how to engage in them. In this analysis they facilitate the virtual convergence of geographically dispersed targets and offenders in a context where guardianship is weak, and traditional behavioural norms and order-maintaining mechanisms may not be effective. Accordingly, as mobile penetration increases in the developing world, we can

expect a corresponding increase in crime targets to increase the prevalence of crime.

Routine activity theory (RAT) provides a theoretical mechanism to investigate this phenomenon. This approach is used to examine how the convergence of suitable targets (whether individual users, mobile phone handsets or the data contained therein) and motivated offenders creates conditions for crime; and how the real or perceived presence of capable guardians may reduce crime by altering calculations of effort, risk and reward (Cohen & Felson 1979). These theories provide the framework for the investigation, exploring opportunities for crime by examining changing constellations of suitable targets, motivated offenders and capable guardians. Mobile phones create new crime opportunities, and have been variously analysed as *crime targets* (Farrell, 2015; Farrell, et al., 2010; Mailley, et al., 2008; Sidebottom, 2013), *crime multipliers* (Felson, 2002) and *crime facilitators* (Vander Beken & Balcaen, 2006; Farrell, 2015; Harrington & Mayhew, 2001; Hoare, 2007; Laycock, 2004; Newman & Clarke, 2003). They are also, in this study, investigated as *crime inhibitors*, drawing on the findings of previous studies (Klick et al, 2012; Pain, et al, 2005; Shapiro & Weidmann, 2012, Shapiro & Siegel, 2015; Sidebottom, 2015).

This approach investigates perceptions of crime and security associated with mobile telephony, and explores how constellations of vulnerability inform the *effort, risk and reward* associated both the perpetration and prevention of crime. The study proposes a classification of identified crime threats, and analyses and classifies prevention measures according to the frameworks of situational crime prevention, specifically drawing on the 25 techniques (Cornish & Clarke, 2003). Opportunity prevention techniques characterising IN SAFE HANDS (Whitehead et al., 2008) are also applied to the prevention of handset theft.

1.5 Significance of the study

Many academic research communities engage with the economic, social, and political impacts of the rapid transformation of mobile telephony in the developing world, including communication studies, information science, computer science, sociology, anthropology, design, political science, public policy, and economics (Donner, 2008). Identifying how mobile phones may facilitate or inhibit crime and insecurity is a critical and understudied area of

research. As mobile penetration continues to expand and potential risks are increasingly recognised, the need for crime and security scientists to engage with this topic has never been greater.

There is a clear link between poor socio-economic development and crime, conflict, and insecurity (World Bank, 2011). Crime contributes to income inequality, undermines democracy, and slows the pace of development (ibid). Despite this, there has been limited Western academic engagement with crime and crime prevention in the developing world. Studies investigating the impacts of mobile phones have focused on economic, social and political transformations, and their crime and security implications have been insufficiently addressed.

The research illuminates new avenues for crime and security research in the developing world, investigating the applicability of opportunity crime theory in non-traditional, resource-poor settings and investigating the analysis of African crime prevention mechanisms through the frameworks of SCP. The application of these theories has been proposed and initially investigated by Sidebottom (2015), and the present study draws on these theoretical frameworks to reveal both the potential for, and the existing use of, innovative and effective situational prevention mechanisms in non-traditional settings.

Mobile telephony is increasingly acknowledged as a vital mechanism contributing to global development priorities and responding to emerging crises (Coyle & Meier, 2009; Heeks, 2009; IFRC, 2005; Wall & Robinson, 2008; Wall, 2012). The risks associated with mobile phones in crisis-affected contexts are, as yet, not fully understood (IFRC, 2013) and this study contributes to addressing this deficit. Insufficient awareness of the broad crime and security threats associated with mobile telephony in the developing world could lead humanitarian and development practitioners to exacerbate existing crime and security challenges, or introduce new vulnerabilities to populations they seek to support. Through increasing the knowledge base on user perceptions and experiences of security and crime associated with mobile telephony, and identifying how social, cultural and situational conditions contribute to crime opportunities in developing world settings, this study aims to inform the development of appropriate policies and mechanisms to protect mobile phone

users from crime and security threats. The practical implications of these findings may also be relevant for government bodies, police and security forces, and mobile operators seeking to prevent and constrain the misuse of mobile networks, or to leverage them for detecting and preventing crime and insecurity.

Finally, this analysis provides insights into the methodological challenges and opportunities associated with both primary and secondary data on mobile phone crime in developing world settings, and proposes alternative methods that could be used to investigate this topic further in future studies.

1.6 Research design

The aims of this research are pursued through an extensive review of relevant literature pertaining to mobile phone crime and ICTD, and the analysis of primary data drawn from two selected case studies. These data are analysed to identify how mobile phones both contribute to user security and create new opportunities for crime. Techniques for the prevention of mobile phone related crime, and the prevention of crime using mobile phones, are also identified.

The two case studies are violence-affected populations in Kenya and displaced populations in Uganda. Kenya is an East African country characterised by high rates of mobile phone ownership and use (GSMA, 2015a). Mobile telephony has previously been implicated in the escalation and coordination of civil conflict and violence during election periods (CIPEV, 2008; Goldstein & Rotich, 2008; Osborn, 2008). The primary data were collected in Kenya during the 2013 pre-election period for two theoretical reasons. Firstly, this timing facilitated the examination of the association between mobile phone networks and the dissemination of threats and the escalation of violence. Secondly, it provided a timely opportunity to investigate the effectiveness of preventative mechanisms, such as mobile-enabled reporting tools and platforms disseminating narratives of peace and coexistence (Goldstein & Rotich, 2008; Iacucci, 2013; Meier, 2011b). The second case study comprises displaced users in Uganda, where the research was conducted during a period characterised by the rapid influx of refugees fleeing instability in neighbouring countries such as the Democratic Republic of Congo (DRC) and South Sudan. This case study provides the opportunity to examine the relationship between mobile phones and crime and security for displaced populations.

The primary data collection applies a mixed methods approach and instruments comprise semi-structured interviews, focus group discussions (FGDs), and a survey collecting both qualitative and quantitative data. Analysis of the survey and FGD data informed the subsequent analysis of user perceptions of crime and security threats and benefits associated with mobile telephony, facilitating the triangulation of qualitative and quantitative data. Additionally, semi-structured recorded interviews were conducted with the local research assistants who administered the survey in both Kenya and Uganda, adding further interpretive depth to the findings and illuminating contradictions and ambiguities within the survey data. Semi-structured unrecorded interviews were conducted with representatives of organisations using mobile telephony for the prevention of crime and insecurity in these settings. The use of mixed research methods enabled the collection and analysis of qualitative and quantitative data illuminating trends, patterns, underlying mechanisms and cultural logics to inform this study (Brewer & Hunter, 2006; Creswell, 2009; Creswell & Plano Clark, 2011; Johnson, et al., 2007; Teddlie & Tashakkori, 2009).

Analysis of the primary data illuminates the opportunity structures that inform experiences of mobile phones as crime facilitating and crime inhibiting in real-world settings. Qualitative data are analysed using Nvivo (version 10) and quantitative data analysed using Excel and SPSS (Version 22). The research design is described in full in Chapter Four.

1.7 Limitations of the study

The study is limited by both methodological and theoretical constraints. Research examining the impacts of mobile telephony in the developing world is complicated by the interconnected nature of digital media, both 'old' and 'new'. This study is no exception, and the literature review necessarily draws upon studies addressing the impacts of both mobile telephony and other Information Communication Technologies (ICTs). Although personal communication mechanisms increasingly provide diverse and interconnected functionality, there are critical differences in the use, impact, and value of personal computing, the Internet, and online social networks compared to mobile telephony (Donner, 2008). Accordingly, and for the sake of parsimony, this investigation is concerned primarily with the most basic and widely-available functions of the mobile phone: Voice calls and SMS, and basic data storage. This study is also

specifically concerned to understand *user perceptions and experiences* of crime and security. It does not address the *methods* and *motivations* of perpetrators in any depth. On this subject, the reader is advised to refer to Burrell (2011; 2012) for an examination of the morality and strategizing of young Ghanaians developing online scams, which could provide a starting point for further research on offender motivations.

In addition to these theoretical limitations, this study is constrained by methodological challenges that limit the scope and reliability of data. The data collection instruments and administration were inevitably imperfect, and complications associated with cultural norms, linguistic barriers and geographical constraints all inform the reliability and generalizability of the data. This is mitigated as far as possible through the iterative and reflexive analysis of the findings, and critical analysis of the interviews conducted with local enumerators subsequent to the survey administration.

Inevitably, the findings presented in this thesis are constrained by the scope and reliability of the primary data on which they are based. These limitations are critically analysed in Chapter Seven, and a range of measures and methodological approaches are proposed to overcome these challenges and limitations. Recognising the limitations of these data, the theoretical and methodological findings described herein nevertheless provide a valuable foundation for understanding perceptions of the crime and security impacts of mobile telephony, both positive and negative, and for the application of SCP techniques to the prevention of m-crime in resource-poor settings.

1.8 Definition of terms

These terms are used throughout the thesis as conceptual tools to inform theory-building, drawing on a wide range of theoretical foundations.

Crime: Crime specifically concerns actions that constitute an offence and are punishable by law.

Threat: Threat refers to particular events or circumstances with the potential to result in undesired consequences. The phrase 'crime and security threats' is used throughout this thesis to broadly delineate undesirable crime and security consequences associated with mobile telephony. Mobile crime and security

threats include events and circumstances perceived by users to be threatening, regardless of legality.

Vulnerability: Vulnerability is a multi-dimensional concept widely applied to research in a number of fields. Adapting the definition of the International Federation of the Red Cross (IFRC, 2015), for the purposes of this thesis vulnerability refers to the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of threats.

Resilience: This term is widely applied to both natural ecosystems and human societies. The definition used in this thesis is based on the central qualities identified by Norris et al. (2008) following a review of multiple definitions of the term. For the specific purposes of this research, resilience is defined as the capacity of individuals and communities for successful adaptation in the face of crime and security threats.

Security: Security is broadly defined as a state of freedom from threat.

M-Crime: Drawing on existing definitions of cyber-crime, the term 'm-crime' is proposed to describe any illegal activity using mobile telephony as its primary means of commission.

A list of acronyms is also provided to assist the reader with abbreviations used throughout the thesis (see p. 17).

1.9 Organization of the thesis

The thesis is structured in seven chapters, as follows:

Chapter One: The Introduction (the current chapter) grounds this study in the context of the rapid growth of mobile telephony in the developing world and increasing acknowledgment of its applications for social, economic and political development. It outlines critical gaps in existing literature, highlighting the neglect of potential crime and security threats associated with mobile telephony. The chapter introduces the purpose and significance of this study and presents the aims and conceptual framework. It then outlines the mixed method design, summarising the selection of the two case studies, acknowledges key assumptions and limitations and delineates the scope of the study.

Chapter Two: This chapter presents the aims of the study and examines the relevant academic research on the impacts of mobile telephony. The rapid and widespread increase in mobile connectivity in Africa is introduced first, outlining limitations of reliance on industry level data to estimate access and use, and examining the (interconnected) socio-economic and demographic contexts influencing mobile phone ownership, use, and sharing behaviours. This section also addresses the implications of the virtual extension of social networks facilitated by mobile phones. This is followed by an overview of studies addressing the relationship between mobile phones and user security, examining financial security, uses during emergencies and the implications of mobile phones for the escalation of disorder. Finally, this chapter addresses crime prevention applications of mobile phones in developing world settings, examining issues of responsibility and associated threats to user privacy.

Chapter Three: The Frameworks of Analysis chapter introduces the history and origins of opportunity theories of crime, and explains how they depart from traditional offender-oriented approaches to crime. This includes rational choice and routine activity theory, and mobile phones are examined as both *targets* and *facilitators* of crime. The chapter also explains the application of these theories and related techniques of situational crime prevention to the prevention of crime threats associated with mobile telephony, and to the use of mobile telephony for the prevention of other crimes.

Chapter Four: The Methods chapter presents the mixed methods, case study design of this study. It outlines the sample, instruments, and procedures through which primary qualitative and quantitative data were collected and analysed. This chapter also describes methodological limitations, examines sources of bias and error, and outlines the research ethics.

Chapter Five: This chapter presents the background and findings of the first case study. It examines mobile telephony in Kenya and describes the measures adopted to prevent the dissemination of hate-speech and the misuse of mobile networks. The second part of the chapter analyses the primary qualitative and quantitative data thematically, examining the perceived security benefits and opportunities for crime associated with mobile phones among study participants in Kenya. The findings concerning the preventative measures adopted to

mitigate crime threats associated with mobile phones in Kenya, including SIM registration and monitoring, are then presented.

Chapter Six: This chapter is concerned with the second period of fieldwork in Uganda, examining perceptions of mobile telephony and crime among refugees and migrants in Uganda. The chapter first introduces background information about refugees and migrants in Uganda and the use of mobile phones by displaced populations, and then presents the primary empirical data collected during the fieldwork period. The findings first present the patterns of ownership and use among the sample, and then address security benefits followed by perceptions of crime and security threats associated with mobile phones. Finally the chapter addresses attitudes to the prevention of crime associated with mobile phones.

Chapter Seven: The discussion chapter is broadly structured in eight sections. After an initial chapter summary, the application of mobile phones as crime inhibitors and uses for crime reporting and prevention are discussed. The next section examines the ways in which mobile phones create new crime opportunities in developing world settings, and is followed by an analysis of the social, cultural and situational conditions which contribute to opportunities for crime. Identified hybrid crime and security threats associated with mobile telephony in the two case studies are then categorised, and the new term *m-crime* is proposed to differentiate these from other types of crime. The 25 techniques of SCP (Cornish and Clarke, 2003) and IN SAFE HANDS (Whitehead et al., 2008) are then applied to the analysis and prevention of handset theft. The 25 techniques of SCP (Cornish and Clarke, 2003) are also applied to identify and analyse the application of existing and future potential prevention techniques for uses of mobile phones as crime facilitators. Finally, the chapter reflects on conducting research on crime in non-Western settings, outlines weaknesses of the methods and tools, proposes ways these could be mitigated and identifies lessons for future studies.

Chapter Eight: The Conclusions chapter summarises the investigation into mobile telephony as a *crime target* and *crime facilitator* in developing world contexts, and outlines the main contributions of the study. In short, these comprise an investigation of the ways mobile phones inhibit crime and create

crime opportunities in developing world settings, the identification of social, cultural and situational conditions contributing to these opportunities, the identification, analysis and categorisation of crime threats, and the application of SCP techniques corresponding with the '*effort, risk, reward, provocations, and excuses*' to propose appropriate preventative strategies. This chapter also outlines the limitations and examines the theoretical and practical implications of the study.

Chapter Two: Mobile telephony and crime in the developing world

2.1 Introduction

This research investigates the relationship between the increasing penetration of mobile phones in African settings and the crime-facilitating, and crime-inhibiting, impacts of these tools through an opportunity crime perspective. Previous studies associate a multitude of developmental benefits with the increasing penetration of mobile phones. These include the widely recognised social, political, economic and psychological benefits of increasing connectivity with both informal social networks and formal organisations and agencies (Abraham, 2007; Aker, 2008; Aker & Mbiti, 2010; Blumenstock, et al., 2011 de Silva & Ratnadiwakara, 2008; Duncombe, 2012b; Jack & Suri, 2014; Jensen, 2007; Morawczynski, 2009; Morawczynski & Pickens, 2009; Overa, 2006; Souter, et al., 2005; Tenhunen, 2008). The corollary of this increasing access to formal and informal networks is widely assumed to be an increase in real and perceived security for users, and assumptions about developmental progress often underpin academic analyses. However, the relationship between mobile telephony and crime and security in African settings has been largely obscured by the widely-cited association between mobile connectivity and positive development outcomes, and applications for crime prevention are also under-developed.

Studies of mobile telephony in emergencies and civil conflicts provide a useful entry point for this analysis, as they are among the few studies investigating negative security impacts of these tools in developing world settings. Although these studies address the implications of mobile telephony for the organisation of violence and insecurity (Bailard, 2015; Best, 2011; Pierskalla & Hollenbach, 2013; Shapiro & Siegel, 2015; Shapiro & Weidmann, 2012), they nevertheless overlook wider implications for personal security that are addressed in this study. As mobile telephony continues to increase rapidly in developing world settings, this is a critical historical moment in which to investigate this topic. As Ling and Donner state in the introduction of *Mobile Communication*, "If we squander this chance to study mobile use, it will not come again" (2009, p. 4).

Addressing next the opportunities for inhibiting crime associated with mobile phones, studies reviewed in this chapter reveal that mobile phones enable users to enhance their social and economic wellbeing and also report and respond to emerging crime and security threats in resource-poor settings (Abraham, 2007; Aker & Mbiti, 2010; Best, 2011; Blumenstock, et al., 2011; Coyle & Thornton, 2007; Coyle & Meier, 2009; Jack & Suri, 2014; Morawczynski, 2009; Overa, 2006; Porter, 2012; Rotberg & Aker, 2013; Shapiro & Siegel, 2015; Shapiro & Weidmann, 2012). This background literature sets the scene for the examination of an understudied corollary of this increasing connectivity; the associated increase in opportunities for crime, and enhanced opportunities for the prevention of crime through increased reporting and detection capabilities.

Recognising the complex and multi-faceted development benefits associated with mobile telephony in resource-poor settings, this chapter sets out the relationship between mobile phones, development and security in developing world settings. Constellations of access and use are examined in order to illuminate opportunities for crime threats, reveal ways in which mobile phones contribute to users' security and access to crime reporting opportunities, and highlight social, cultural and situational conditions informing these opportunities. The subsequent chapter describes the theoretical frameworks guiding the analysis of the relationship between processes of socio-technical change associated with mobile phones and opportunities for crime and crime prevention in developing world settings.

2.2 Mobile telephony in the developing world

In order to understand the key differences in opportunities for crime and crime prevention associated with mobile telephony in African settings, it is essential to examine differences between access and use of mobile telecommunications in the developed and developing world. Overviewing the rapid and widespread penetration of mobile connectivity and examining industry-level user data demonstrates the speed and scale of these socio-technical changes. The social, cultural and situational conditions in developing world settings critically inform the changing opportunity structures for crime and crime prevention, also influencing patterns of ownership and use. Accordingly, inequality, exclusion,

and practices of sharing are examined to inform the analysis developed in this thesis.

2.2.1 Scope and scale of mobile penetration

As a result of the rapid pace of mobile penetration worldwide, the current era is characterised by unprecedented global connectivity. These rapid technological shifts provide networked connectivity to previously disconnected developing world users. Mobile phones have the potential to connect entire populations with each other and with formal agencies, in settings where these new users have little experience with interpersonal communications and alternative sources of information may be limited and unreliable. Predicting that the widespread and rapid penetration of mobile phone technology has contributed to the emergence of new opportunities for crime and crime prevention, and further that developing world users are particularly vulnerable to crime threats, this section describes the development and use of mobile phones in developing world settings.

Addressing first the functionality of the technology in question, mobile phone handsets function by connecting to cellular networks operated by mobile network operators (MNOs). Each handset requires a Subscriber Identity Module (SIM) card microchip that stores the key used to identify and authenticate the user and connect to a particular network (Sauter, 2013). Many popular handset models in the developing world include multi-SIM capabilities to take advantage of preferential call rates offered by different MNOs (Eagle, 2010), enabling a single handset to function on multiple networks simultaneously.

Mobile phone handsets have evolved from the most basic models, referred to as 1G (first generation) to the present-day 4G (fourth generation) models. Early models used analog cellular networks, while later generations (2G onwards) utilise digital cellular networks enabling SMS and data capabilities (Sauter, 2013). 3G phones introduced mobile broadband capabilities and other multimedia capabilities, and finally data-optimised 4G technologies were developed to enable the streaming of bandwidth-intensive applications (ibid). In Western countries, the majority of mobile users own individual handsets and use advanced handsets with computing capabilities which provide access to the Internet, email, photography and video capabilities (Corbett, 2008). In contrast,

popular models in the developing world are basic handsets, although 'smartphones' are increasingly common in urban centres and among more affluent groups (GSMA, 2013). The main focus of this research concerns the networked connectivity facilitated by standard features of basic handsets: calls and SMS and data storage. However the study does not exclude the wider functions of these devices, recognising that opportunities for crime and crime prevention are associated with different communications and storage capabilities.

Mobile phone connection figures reveal the remarkable speed with which mobile telephony has been adopted around the world. In 2001 the International Telecommunication Union (ITU) announced that there were one billion mobile connections¹ in the world (ITU, 2001), and by 2014 the number of mobile phone connections had surpassed the total population of earth (ITU, 2014). This speed of technological change is associated with a wide range of socio-economic and political transformations, but the impacts on crime and security have not received significant attention. Furthermore, ITU statistics reveal that over three quarters of these subscribers live in the developing world, where mobile penetration² was estimated to exceed 90% by the end of 2015³ (see figure 1). The speed and breadth of mobile phone penetration in developing world settings is likely to have far-reaching and complex consequences across a range of social, economic and political domains, including crime and security.

¹ Mobile phone connections refers to the number of active mobile SIM cards.

² Mobile phone penetration refers to the number of connections relative to the total population of potential subscribers

³ Compared to the mobile penetration rate of 121% in the developed world, indicating that a fifth of users own more than one active mobile SIM card

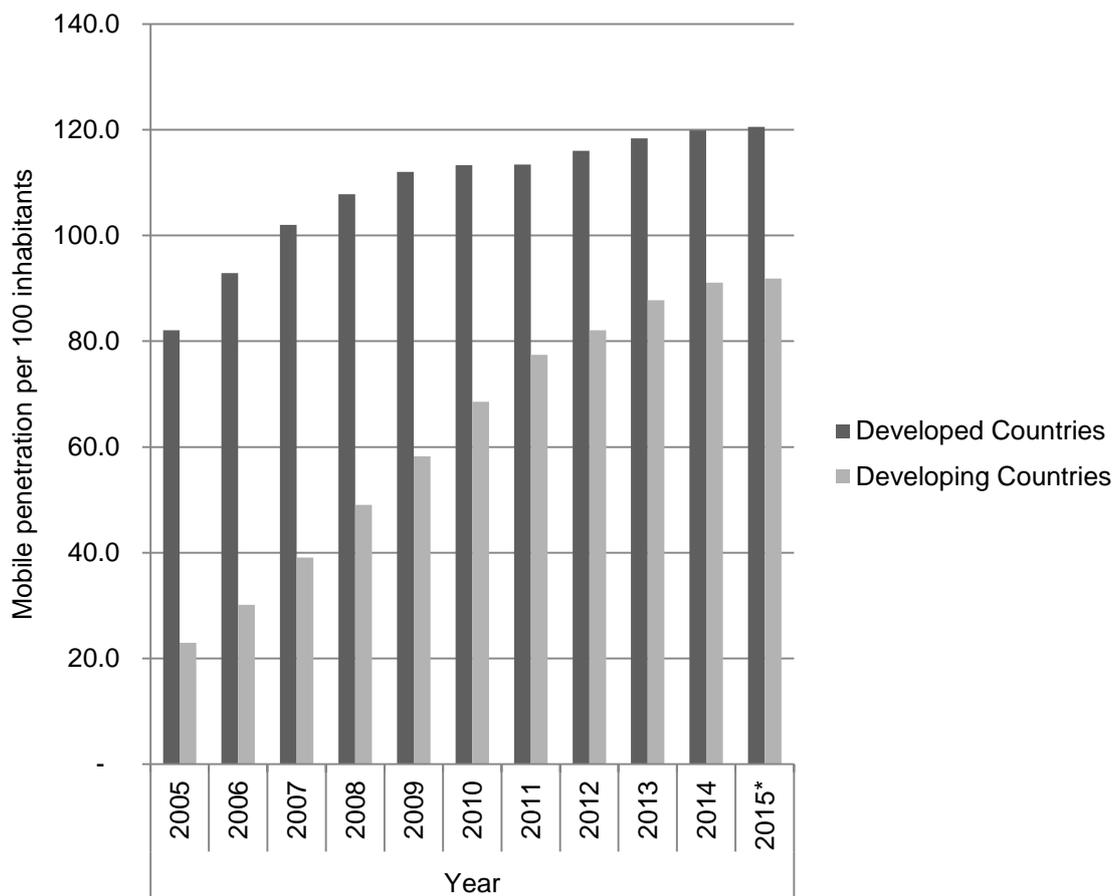


Figure 1: Mobile penetration per 100 inhabitants in the developed and developing world (ITU, 2015)

The rapid growth and widespread availability and affordability of mobile telephony are unique in the history of communications in Africa, and are associated with processes of socio-technical change (Aker & Mbiti, 2010; Ling & Horst, 2011; Porter, 2012). In contrast to the developed world, mobile telephony in Africa was not predated by fixed-line telephones, in-car telephones, pagers, telegraphs and other peer-to-peer communicative tools (Aker & Mbiti, 2010; Castells, et al., 2007; James, 2014; Ling & Horst, 2011). Mobile phones are often the first generation of ICTs available to developing world users. In the developing world, fixed-line telephones are rare, unreliable and expensive. GSMA Intelligence estimate that fixed line telephone access was available to less than 1% of the population of Sub-Saharan Africa as recently as 2012 (Sharma & Gillet, 2014). To contextualise this, Aker and Mbiti's (2010) survey results indicate that fixed-line telephone users in Kenya experienced interrupted service (average 36 days per year), long waiting times to be connected (average 100 days) and paid bribes in return for connections (average US\$117). Mobile phones provide a cheap and convenient means to circumvent

the challenges associated with fixed line telephone services. For rural populations living in geographically remote areas, additional infrastructure challenges such as the absence of paved roads and electricity coupled with challenging environmental conditions (flooding, landslides etc.) also contribute to the absence of fixed line connections (Sharma & Gillet, 2014). In contrast, mobile phones are not impeded by challenging terrains and sparse populations, as signals are broadcast through radio waves rather than fixed cables. As mobile penetration rates continue to increase worldwide, the popularity of fixed line telephony is declining in both the developed and developing world (figure 2).

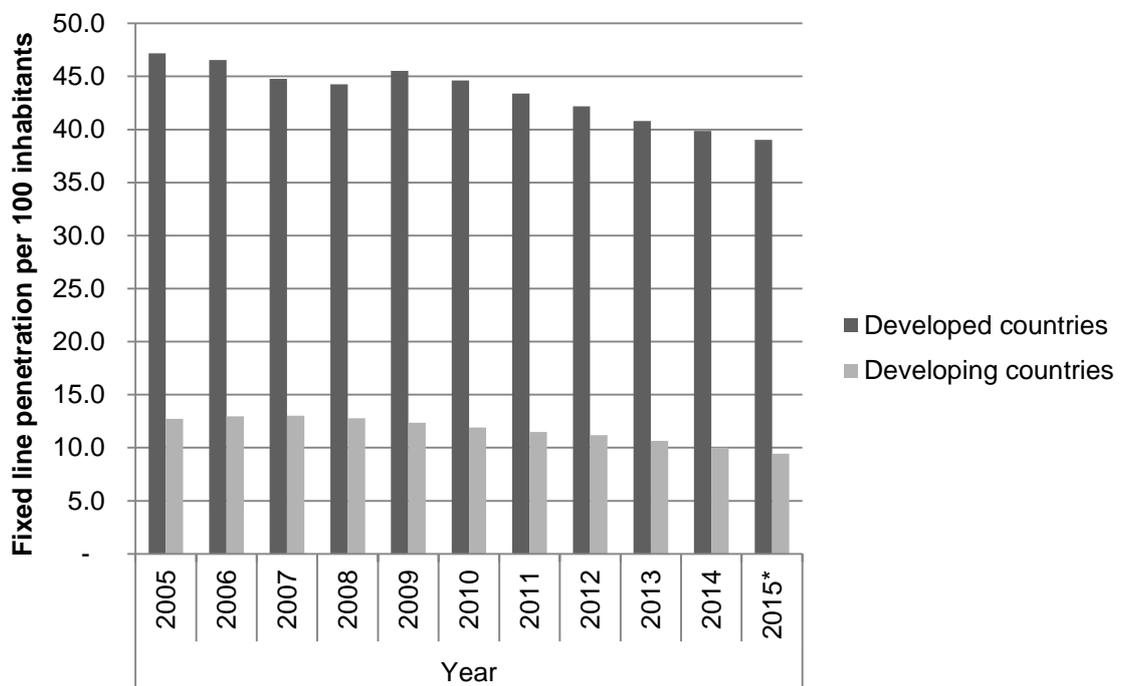


Figure 2: Fixed line penetration per 100 inhabitants in the developed and developing world (ITU, 2015)

Limited communications options are available in many developing world settings. Particularly in rural areas, televisions and newspapers are rare, and radio broadcasts sporadic and poorly regulated. Mobile phones provide two-way communicative capabilities to societies historically starved of informational resources (Aker & Mbiti, 2010; Ling & Donner, 2009), decentralising the capacity of users to transmit and receive information rapidly and across vast distances. In such contexts, mobile telephony facilitates unparalleled opportunities for users to access and exchange information and support. In

relation to the aims of this study, it may be postulated that mobile phones also provide opportunities for the commission and prevention of crime and insecurity.

2.2.2 Patterns of ownership and use

Recognising these broad shifts in connectivity across the developing world, it is essential to acknowledge differences in access to mobile telephony. While mobile telephony is the fastest growing communications technology in history, a huge connectivity gap remains across the developing world. The terms 'missing link' (Maitland, 1984) and 'digital divide' (Castells, et al., 2007) have been variously coined to describe the socio-economic disparity between technological 'haves' and 'have-nots', in which particular social and demographic groups are systematically excluded from ownership and use of digital technologies.

Statistics showing the impressive growth rates of mobile phone penetration tend to obscure these inequalities of access and use, yet they are critical to analyses of the impacts of mobile phones. Merely counting subscriptions is misleading; data showing the number of SIM cards sold and active does not reveal anything about their distribution. Previous studies demonstrate that patterns of ownership vary between and within populations, and sharing behaviours may further complicate analyses that assume a one-to-one ratio between ownership and use (Aker & Mbiti, 2010; Burrell, 2010; James, 2011; James & Vesteeeg, 2007). This is important to acknowledge these patterns as it is likely that users' experiences of crime and security threats and benefits associated with mobile telephony are informed by their access and use of mobile phone handsets.

A number of factors influence access to, and use of, mobile telephony. Firstly, considerations of cost are likely to be critical for populations living in resource-poor settings. The majority of mobile users in the developing world use prepay options⁴ rather than fixed contracts (ITU, 2014). Consequently, handsets are not subsidised by service providers as they are in the UK and elsewhere (ibid), and the initial costs of purchasing a handset and SIM card are high (Aker & Mbiti, 2010; BalancingAct, 2009; Wall & Robinson, 2008). In 2010 Aker and Mbiti reported that, "the cheapest mobile phone in Kenya ... costs half the average monthly income, whereas the price of the cheapest mobile phone in

⁴ Users purchase vouchers (available in a range denominations) to recharge their credit accounts prior to using mobile services. Vouchers typically expire a set period of time after activation

Niger is equivalent to 12.5 kilograms of millet, enough to feed a household of five for five days” (2010, p. 211). In addition to purchase and start-up costs, the relative cost of usage is also higher in developing world settings. In a BBC World Service Trust report on the use of mobile phones by people in crisis, Wall and Robinson (2008) estimate that developing world mobile users spend 17.5% of their income on ICTs, compared to just 1.5% in developed countries. In the same year, Tenhunen (2008) reported that simply making a short phone call cost around 8% of a labourer’s daily income in rural India. In contexts of widespread poverty and low disposable income, these costs inhibit both ownership and use by the poorest sections of society, and contribute to complex patterns of shared ownership and use as well as innovative low-cost communication strategies.

Although the initial costs are falling as the availability of second-hand mobile handsets increases, the ongoing costs of mobile phone use can be considerable for economically disadvantaged users (ITU, 2014). These high costs are reflected in emerging cost-saving behaviours, such as reliance on the now ubiquitous ‘one bell’ technique employed by lower-income users to send a pre-agreed message or to request a phone call (Horst & Miller, 2006). Pre-existing economic inequalities may also contribute to less financially empowered mobile users becoming passive recipients of SMS messages and calls instigated by more wealthy members of their social network, as Abraham (2009) notes in an ethnographic account of Zambian women’s rights advocates. In her analysis, these mobile-mediated inequalities of power embody pre-existing socio-economic disparities, creating a “virtual class system” (2009, p. 100) in which low income women effectively lose their voice, becoming “silent listeners and simply recipients of texts and alerts from more financially empowered members” (2009, p. 99). Examining the implications for crime and security, it may be postulated that financially disempowered users of mobile phones are likely to have less access to the security-enhancing benefits associated with mobile phones. The most economically vulnerable users will have the lowest access to both handsets and phone credit to report crime and seek assistance. However, these same conditions may reduce their vulnerability to handset theft, as low-income mobile users are less likely to own handsets.

The high costs associated with mobile phone ownership and use in the developing world have led scholars to question whether mobile telephony, by excluding the most marginalised, is likely to maintain and entrench existing inequalities (Abraham, 2009; Duncombe, 2012b; Jagun, et al., 2008; Porter, 2012; Souter, et al., 2005). The question for this study is whether these patterns of access and exclusion inform crime and crime prevention. As noted, users who purchase a mobile phone but cannot afford to purchase credit regularly may be unable to report crime and seek assistance when needed. Financially disempowered users may be unable to actively verify incoming information by triangulating it through initiating outgoing phone calls. These constrained usage patterns, widely recognised in existing studies, may be hypothesised to inform the vulnerability of economically disempowered users to mobile phone crime, and access to crime prevention functions.

In addition to economic considerations, inequalities of access to, and use of mobile phones are also influenced by several other interacting social and demographic factors that are likely to affect users' risk of, and vulnerability to, mobile phone crime and access to security-enhancing functions. The GSMA (2012) report that women are 21% less likely to own mobile phones than men worldwide and 23% less likely in Africa. Factors affecting women's ownership include household income, residence in an urban or rural location, age, occupation and educational levels (GSMA, 2012). Other studies report similar findings. Deen-Swarray, Gillwald and Morrell (2012) draw on the results of a 2012 household survey conducted in twelve African countries to argue that income and education are the most significant barriers to women's ownership of mobile phones. Hilbert's (2011) findings corroborate this, indicating that women's lower rates of access and use of mobile telephony correlate with their lower rates of employment, income and education based on data from twelve Latin American and thirteen African countries between 2005 and 2008. However, Hilbert (2011) further argues that controlling for employment, income and education reveals women to be *more* active users of digital tools than men, suggesting that wider socio-economic inequalities constrain their usage. Qualitative studies also corroborate women's exclusion from the use of mobile phones in developing world settings. In an analysis of women's advocacy networks in Uganda, Ngolobe (2010) describes how women's lower levels of

literacy and education relative to men combine with gender-related constraints on time and mobility with the consequence that women are less likely than men to use mobile phones and access other forms of ICTs. In a review of literature on livelihoods and mobile phones, Porter (2012) argues that women's access to mobile phones is often limited by male control and shaped by suspicion in Sub-Saharan Africa. Porter argues that women's mobile phone ownership can contribute to intra-family tension, and furthermore suggests that the impacts of mobile technology do not alter, "fundamental asymmetries and inequalities" between men and women (Porter, 2012, p. 254). This finding is echoed in ethnographic studies in Uganda (Kyomuhendo, 2009) and Kenya (Morawczynski, 2009). Kyomuhendo (2009) reports the findings of a small-scale study conducted through interviews and informal discussions with women in Hoima, Uganda, describing the ways in which mobile phones reduce women's digital and physical isolation while simultaneously causing tensions within the family by enabling women to conceal savings and maintain secret relationships. Morawczynski (2009) describes similar findings in an ethnographic study conducted in Kenya, where women use the secure facilities afforded by mobile banking to conceal savings from husbands. These studies suggest that mobile phones provide women with the means to bypass constrained physical environments and enhance their independence by concealing individual earnings and savings and coordinating socialisation beyond traditional boundaries. However, these impacts are perceived to be dangerous or subversive for traditional social norms and patterns of behaviour. It is likely that these conditions also inform women's vulnerability to mobile-enabled crime, and access to mobile-enabled security benefits. For example, women's constrained mobile phone use may exclude them from accessing the security benefits associated these tools if they are unable to report crimes in progress or call for assistance. However, women's constrained usage but may simultaneously minimise their receipt of fraudulent content and threats and reduce risks of handset theft.

Another consideration that is likely to affect users' engagement in mobile networks is education (Aker & Mbiti, 2010; GSMA, 2012; GSMA, 2014; Tenhunen, 2008), with more educated users benefiting from different functionality (e.g. SMS) and higher use rates. In her ethnographic account,

Tenhunen (2008) notes that in West Bengal SMS messages are rarely used by subjects as they require literacy in Latin or Hindi characters and most users are Bengali speaking. A report on digital inclusion published by the GSMA also describes illiteracy and digital illiteracy as significant barriers to mobile internet adoption in particular, noting that “in developing countries in particular, illiteracy is most prominent across rural areas and marginalised groups, such as the poor and youth, and causes a major challenge in accessing internet content which is predominately text based... even where coverage and affordability issues have been addressed” (GSMA, 2014, p. 4). Accordingly, less educated users may be excluded from text-based uses of mobile phones, such as SMS. This has implications for the crime and security impacts of mobile phones. SMS are a low-cost method of transmitting information, but recipients may be unable verify the identity of the sender compared to a voice call. As a consequence, illiterate users may actually be less vulnerable to crime committed through SMS. However, they also lack the option of using SMS to send or receive information and updates on emerging crime threats.

These social and economic conditions also interact with patterns of *handset sharing* which are common in resource-poor settings (Aker & Mbiti, 2010; Burrell, 2010; James, 2011; James, 2014; James & Vesteeeg, 2007; Tenhunen, 2008). Practices of handset sharing increase access to mobile telephony, leading James and Vesteeeg (2007) to critique the concept of digital divide as predicated on false assumptions about individual ownership. Mobile subscription data are based on the number of individual SIM cards in use, but sharing behaviours may contribute to an invisible body of secondary mobile users in the developing world. For example, Aker and Mbiti (2010) report on survey data from Kenya indicating that one third of Kenyan mobile users share their handsets. These authors also describe the first adopters of mobile telephony across Africa as male, educated, wealthy and urban, suggesting that secondary users include more women, less educated, less wealthy and rural populations. James (2011) tests these assumptions by drawing on household-level survey data from eleven African countries, arguing that when sharing is accounted for, inequalities of access between countries are largely negated. However, this analysis assumes an operational equivalence between *shared access* and *ownership* which is unlikely to be reflected in users' experiences of

the crime and security impact of mobile phones. In practice, fundamental inequalities are likely to exist between owners and users of mobile phones, and this relationship may be mediated by wider socio-cultural and economic relations of power and inequality. Handset sharing is also likely to inform crime opportunities, vulnerabilities and access to security benefits associated with mobile phones. Handset owners retain authority and control over usage - deciding who, when, and where to use their handsets and retain access to information stored on the device. Secondary users remain reliant on, and subservient to, handset owners who retain ultimate decision-making authority over the handset. However, it may be postulated that mobile phone owners are likely to be more vulnerable to handset theft than sharers, and crime threats associated with the theft of data contained within handsets is also likely to vary between owners and sharers.

Burrell (2010) critiques the established concept of shared use which posits a simple distinction between those with access to a particular technology, and those without. Rather, she recommends a shift in focus to examine “the rich and varied ways that technologies are... being informally shared within populations of rural regions as they cope with conditions of scarcity” (2010, p 231). Burrell also identifies inequalities that occur *within* informal patterns of sharing, acknowledging that sharing behaviours encompass a range of configurations and the level of control over shared devices cannot be reduced to binarisms. However, while Burrell’s argument concerns specific *benefits* realised through the phone, the present research is concerned to investigate both benefits for crime prevention, and associated opportunities for crime.

Burrell (2010) investigates non-commercial sharing patterns in rural Uganda, noting differences between mobile phones and other technologies including bicycles, radios and televisions. Unlike these more ‘neutral’ technologies, Burrell notes that some mobile phone owners are unwilling to share their handsets due to secrets contained within the phone, such as contact details of, or messages from, lovers or girlfriends. She cites the example of a businessman living in a rural Ugandan community who is willing to lend out his motorbike (regarded as ‘public’) but not his mobile phone (contrasted as ‘private’) due to its value as a means for protecting his professional network and managing resource competition. Radios and televisions provide access to

generic broadcast media content. In contrast, mobile phones may provide access to personalised content stored within the device. Mobile phones provide opportunities to store valuable, and potentially sensitive data within the handset. This may render users particularly vulnerable in contexts where access to ICTs, and their associated digital storage capabilities, is limited (as described previously). Thus mobile phone owners are likely to be vulnerable to theft of both handsets and the data contained within them, and secondary users may experience opportunities for data theft associated with practices of handset sharing. Burrell notes that, "this diverges from discussions of privacy in the domain of American or European networked computing dominantly concerned with protecting personal information in relation to corporate or government institutions" (Burrell, 2010, p. 239), as privacy threats in these settings may emerge from other users. Burrell suggests collating social contacts in one place is a novel phenomenon which renders users particularly vulnerable to the appropriation of valuable social contacts in the context of highly personalised relations with customers and suppliers.

Practices of sharing mobile handsets add complexity to naïve interpretations of industry-level data on access and penetration figures, and may have multifaceted impacts on security and crime in the developing world. Analysing the implications of these practices suggests that owners and sharers of mobile phones are likely to experience different crime and crime prevention opportunities. Mobile phone owners may use their mobile handset to seek assistance or report crime at any time, but are simultaneously more vulnerable to handset and data theft. Handset sharers may not benefit from the previously documented immediacy of access to social networks and support functions, but they are also likely to be less vulnerable to acquisitive crime in resource-poor settings. The section has identified specific situational conditions in developing world settings that are likely to inform users' vulnerability to mobile crime and security threats, and access to associated security benefits. These include patterns of access to and use of handsets, practices of sharing, and demographic factors including gender, income, and education.

2.2.3 Mobilising social networks

Mobile phone communications and access to mobile phone handsets, and their benefits, are informed by socio-economic factors which are inform opportunities

for crime and crime prevention. Furthermore, mobile phone communications may also be subject to different behavioural norms, both compared to those informing geographically situated interactions and compared to Western contexts. Ethnographic literature provides insights into the relationship between the increasing penetration of mobile telephony and the disruption of traditional power relations and behavioural norms in developing world settings (Archambault, 2013; Castells, et al., 2007; Jeffrey & Doron, 2013; Ling, 2004; McIntosh, 2010; Porter, 2012; Tenhunen, 2008).

Mobile phones enable users to interact within private, networked communication channels. Mobile telephony also has the potential to expand users' social networks beyond their geographical confines, providing access to new (potentially socially disruptive) information and resources. These increased opportunities for autonomy and socialisation can come into conflict with norms of culturally appropriate behaviour, particularly for traditionally marginalised groups such as youth and women (Archambault, 2013; Jeffrey & Doron, 2013; Ling, 2004; Porter, 2012; Tenhunen, 2008). The association between horizontal communications and the bypassing of traditional forms of social regulation emerges from ethnographic fieldwork conducted in traditional communities in particular. In India, Tenhunen (2008) describes how mobile phones enable users to bypass traditional power structures and village elders, facilitating the extension of both kin and non-kin networks beyond traditional boundaries. Tenhunen notes that, "The new phone networks accentuate the dispersal of power beyond the village, as seeking help from outside the village during conflicts and crises has become easier" (2008, p. 525). This extension of social ties, while providing a social support function for individual mobile users, simultaneously threatens traditional authorities, on whose patronage people customarily depend (ibid). Aker and Mbiti (2010) also note that in strengthening extended business networks, mobile telephony can simultaneously weaken local networks as users begin to access credit and services outside of their local communities. This enables mobile phone users to access preferential rates and competitive suppliers, but may have widespread implications for crime and insecurity. As sociability departs from foundations of proximity and convenience, users have opportunities to socialise with new social networks without the oversight of traditional authorities. As Tenhunen notes in India, "In extending

and multiplying villagers' relationships, phones are conferring on village society much of the diversity of connectedness that is characteristic of urban settings" (2008, p. 525). She describes how some users establish friendships with people in distant states "simply by dialling a random number and starting to chat" (Tenhunen, 2008, p. 525). Jeffrey and Doron (2013) report similar findings in India, arguing that mobile phones enable users to bypass existing social hierarchies, noting that these departures from previous constellations of social ties, obligations and power structures result in a perceived association between mobile telephony and moral degeneration. Mobile telephony bisects traditional relationships and fragments their associated norms and values, enabling new opportunities for crime.

Examining attitudes to mobile phones and traditional behavioural codes in Kenya, McIntosh (2010) describes concerns expressed by elders and community leaders around issues such as promiscuity, disrespect of traditions, access to pornography, and even mental illness. McIntosh notes, "one elder, for instance, remarks that the strange qualities of the mobile phone provoke young people to 'speak alone on the roads just like madmen do'" (2010, 349). Mobile phones benefit users by enabling them to access (and strengthen) social networks, but these studies demonstrate that they may simultaneously disrupt traditional behavioural norms. Mobile phones also provide a channel for ordinary citizens to communicate informally in African contexts, where state owned media monopolies may constrain formal channels such as broadcast media (Spitulnik, 2002). Examining the contrast between formal communications and the transmission of humorous anecdotes, jokes and gossip through graffiti, leaflets, and informal communications, Spitulnik (2002) coins the term 'small media' to describe these informal communications. Mobile phone networks provide opportunities for the transmission of informal communications, bypassing formal communications channels.

Burrell (2011) draws on ethnographic data from Internet café users to investigate rumours about Internet scams in Ghana. There are both similarities and differences between crimes committed through the Internet and through mobile phone networks, as the subsequent chapter addresses. However, examining attitudes to Internet crime in developing world settings may provide useful insights into the relationship between developing world users and

networked crimes. Burrell's (2011) findings suggest that users regard scamming as a mechanism for the rapid accumulation of wealth, rather than a lifestyle choice, and furthermore that their experiences contrast with the rumours about successful, and unsuccessful, scammers. Burrell argues that, "rumours are... used by users to reinterpret and reinvent technology" (2011, p140), focusing on user agency both in interpreting the utility of technology, and propagating those interpretations to others. Burrell (2011) describes Internet crime as a high stake activity, "that held the promise of unlimited financial opportunity... [and] represented a dangerous entanglement that could damage the morality and finances of those involved" (2011, p141).

In Burrell's (2011) analysis, scammers utilise new opportunities presented by the Internet to access wealthy foreign crime targets, and extract resources through various forms of deception. While this clearly differs from crime targeting developing world users, it provides a useful way to examine the motivations and decision-making of offenders utilising networked technologies for crime in developing world settings. Burrell notes that Internet users often cast victims as, "affluent Westerners who would not be harmed by scamming activities" (2011, p152), referencing foreign celebrities and sports stars as famous, wealthy examples of the kinds of victims targeted by scammers. This type-casting functions, in Burrell's (2011) analysis, to maximise distance from, and non-identification with, victims of scams as a "strategy of moral justification" (2011, p148). It would seem these strategies are not applicable to scams which are both perpetrated by, and target, developing world victims as addressed in the present study. However, Burrell (2011) also notes that some study participants distanced themselves from scammers, casting them as others, or as marginalised minority groups. Interestingly, during interviews with members of these groups (e.g. slum-dwellers, Muslims, etc.) Burrell (2011) notes that these minority Internet users re-framed scamming as a strategy of self-preservation or self-sufficiency, creating moral justifications for their actions. In contexts where tribal loyalties and ethnic affiliations create strong bonds, mobile-enabled crimes targeting member of other groups may seem morally justifiable by their perpetrators. Although it is beyond the scope of this study, future studies could fruitfully investigate the processes of moral justification applied to scams both perpetrated by, and targeting, developing world users.

For the purposes of this study, reflecting on the implications of tribal and ethnic divisions is valuable for understanding experiences of mobile enabled crime and crime prevention, and for developing preventative strategies.

Archambault (2013) also notes that mobile telephony opens up new, private social spaces through which users can network discretely. In this way, they have become associated with subversive or anti-social activities. For example, mobile phones are used by some young women to coordinate multiple sexual partners in order to access resources, leading Archambault to comment that, "the phone thus allows young women to better juggle what would otherwise be irreconcilable ideals of respectability with economic emancipation" (2013:96). Similar to Jeffrey and Doron's (2013) analysis of mobile telephony in India, emerging networked connectivity offers developing world users a new space in which traditional norms and values are not regulated or enforced.

The ethnographic analyses add interpretive depth to the large-n studies and reveal that the widespread penetration of mobile telephony in traditional communities may contribute to changes in social relations, traditional roles and behavioural norms. By providing a virtual communications arena unconstrained by traditional practices and relationships, horizontal mobile-enabled connectivity may simultaneously liberate users from traditional constraints, and expose them to new opportunities for crime.

2.3 Mobile phones and user security

The most widely recognised benefits associated with mobile telephony in the developing world are informal and economic, ranging from increased access to market information (Abraham, 2007; Aker, 2008; de Silva & Ratnadiwakara, 2008; Jensen, 2007; Overa, 2006) to enhanced banking and savings facilities (Blumenstock, et al., 2011; Duncombe, 2012a; Morawczynski, 2009; Morawczynski & Pickens, 2009). Through reducing communication costs and increasing the speed of information transfer, mobile phones also enhance responses to economic shocks and reduce market uncertainty and business risks (Abraham, 2007; Aker & Mbiti, 2010; Blumenstock, et al., 2011; Jack & Suri, 2014; Overa, 2006; Souter, et al., 2005; Tenhunen, 2008). Through demonstrating links between increase mobile telephone usage and increased efficiency in rural markets, these studies show how informal uses of mobile

phones increase user resilience and reduce vulnerability to threats to their economic security. They also reveal some of the crime and security risks associated with the use of mobile phones for the informal communication of market information. While mobile telephony facilitates transactions based on interpersonal trust, this simultaneously creates opportunities for crime.

2.3.1 Mobile phones and economic security

Examining the impact of mobile telephony on the fisheries sector in India, Abraham (2007) draws on interviews, fieldwork, FGDs and questionnaires to conclude that mobile phones make rural and underdeveloped markets more efficient by enhancing interpersonal communication and thereby reducing information asymmetries, risks, and uncertainties. Overa (2006) uses ethnographic data to demonstrate similar improvements in yam markets and the wholesale fish trade in Ghana, describing how mobile telephones facilitate transactions, enable the calculation of supply and demand logistics, and negate the need for time-consuming and expensive road journeys to access market information. The findings reported by Abraham (2007) and Overa (2006) are corroborated by quantitative research such as Jensen's (2007) analysis of micro-level survey data collected weekly from a sample of 300 fishing outfits over a period of five years. Using these data, Jensen examines the impact of mobile telephones on fisheries markets in Kerala, India, concluding that the introduction and expansion of mobile coverage in the region ultimately resulted in welfare benefits for both consumers (reducing fish prices by 4%) and producers (increasing profits by 8%). While Jensen's study examines a particularly perishable commodity, fresh fish, the real-time communication opportunities enabled by mobile telephony are revealed to provide benefits across a range of markets. For example, in another quantitative study conducted in Niger, Aker (2008) tests a theoretical model predicting a correlation between mobile phone coverage and reductions in price distribution across grain markets using data on prices, transport costs, rainfall and grain production. Aker finds evidence that mobile phone coverage reduces price dispersion across markets by a minimum of 6.4%, which she attributes to the reduced search costs, increased market information and increased efficiency enabled by mobile telephony.

Other mobile-enabled mechanisms are also used to secure assistance from distant social networks. Mobile banking (hereafter termed m-banking) has also emerged as a key mechanism through which mobile telephony facilitates economic risk sharing (Jack & Suri, 2014). M-banking allows users to conduct financial exchanges through mobile phones and provides users in the developing world with previously unavailable access to financial services (Mbiti & Weil, 2014). The popularity of m-banking services is reflected in the rapid rates of uptake. In Kenya, Safaricom reported over 1.1 million users within eight months of launching m-banking in March 2007 (Safaricom, 2007). By March 2013, this figure had burgeoned to 15.2 million users and Safaricom reported an annual revenue of Ksh10.43 billion⁵ (CISCO, 2013).

Access to traditional banking is limited and expensive in Africa, in contrast m-banking enables users to access and transfer financial resources within social networks using a wide network of agents located across the continent (Mbiti & Weil, 2014). These m-banking services enable mobile users to conduct interpersonal financial transfers with distant contacts rapidly and at low cost, enhancing the informal insurance function through which developing world populations share economic risks (Mbiti & Weil, 2014). Drawing on data from a household survey administered in Kenya over a three-year period, Jack and Suri find that households using m-banking services, “are more likely to receive any remittances, they receive more remittances, and they receive a larger total value... [and] users receive remittances from a wider network of sources and a larger fraction of their network” (2014, p. 185). In this way, mobile phone networks support vulnerable users to draw on social networks for economic support, and may contribute to perceptions of security for users. M-banking is also increasingly employed by development and humanitarian initiatives around the world to facilitate financial transfers to beneficiaries (Smith, et al., 2012), and also enables individual users to reduce their vulnerability to external shocks by facilitating access to financial assistance from existing social networks (Jack & Suri, 2014; Mbiti & Weil, 2014).

These studies demonstrate that mobile phone penetration correlates with increased economic security, and suggest that increasing market information

⁵ Over £74million

flows are likely to improve market efficiencies, while m-banking provides opportunities to make direct financial transfers through mobile phones. However, the effectiveness of mobile phones is grounded in pre-existing trust-based relationships between individuals, which enable users to capitalise on the communications opportunities they provide. The importance of mobile phones for increasing users' financial security may have overshadowed rigorous engagement with the opportunities for crime associated with these economic transactions. As increasing numbers of naïve users engage with these opportunities, criminal opportunities are likely to abound. Users who are unfamiliar with both ICTs and with formal banking services may be particularly vulnerable to scams. In contexts where corroborating sources of information are not available, mobile communications provide largely unregulated sources of information from distant sources. While facilitating financial transactions and access to trusted social networks, mobile phones also provide an open communication channels for users to interact with an increasing pool of both known - and unknown - individuals. These individuals may adopt false identities, impersonate trusted individuals, disseminate false or misleading information, or perpetrate financial scams and fraudulent practices. While the potential of mobile telephony for facilitating the rapid transfer of information and financial resources is well documented, the accompanying risks associated with the virtual convergence of trusted social networks and anonymous individuals are often overlooked in existing studies.

2.3.2 Mobile phones in emergencies

The value of mobile telephony for facilitating access to social and economic networks is particularly critical during periods of crisis, as these tools enable users to respond rapidly to economic shocks and access resources through their social networks, sometimes described as *informal insurance policies* (Aker & Mbiti, 2010; Jack & Suri, 2014). Drawing on mobile operator and consumer survey data in their analysis of the economic benefits associated with mobile telephony in Africa, Aker and Mbiti note, "mobile phones can facilitate communication among social networks in response to shocks, thereby reducing households' exposure to risk" (2010, p. 214). By sharing resources and information during periods of vulnerability, mobile phones enable users to seek and provide immediate support to members of their social networks. Jack and

Suri describe similar findings in Kenya, reporting that, “informal networks provide an important means by which individuals and households share risk” (2014, p. 183) by increasing the size and constitution of interpersonal networks and enabling users to access a wider pool of resources. During an earlier study conducted in India, Mozambique and Tanzania, Souter et al. (2005) also describe survey findings indicating that users consider mobile phones to be critical for livelihoods during emergencies,

...the most substantial value of the telephone in terms of livelihoods is in its impact on overall vulnerability, particularly in emergencies. The telephone here has exceptional added value compared with other communications media, in particular because of its immediacy, interactivity and ability to secure assistance from afar. (Souter, et al., 2005, p. 17)

Mobile telephony provides users with a mechanism through which they can secure their own wellbeing by drawing on informal personal networks, accessing resources, information and emotional support from distant friends and relatives. Meier (2011a) argues that ICTs, including mobile phones, enable individuals to respond to natural and political disasters through facilitating a distributed, bottom-up network to share information and provide support. Meier analyses this as an informal early warning system that can enhance disaster response through empowering the resilience of communities to manage threats. Using everyday technologies such as mobile phones, according to Meier, “can empower at-risk communities by enhancing their immediate situational awareness, allowing them to make more informed decisions about how best to get out of harm’s way” (2011a, 13).

In the developed world, Dutton and Nainoa’s (2002) analysis of the role of mobile telephony during the 9/11 terrorist attacks in the USA is also relevant for this analysis. During these terrorist attacks, mobile phones were used both to coordinate attacks by the hijackers and to coordinate responses by passengers of the hijacked planes. Dutton and Nainoa describe passengers using mobile phones to contact their families for emotional support and to access information about contemporaneous attacks elsewhere in the US. This information enabled passengers on Flight 93 to overwhelm their captors and prevent one of the

planned target attacks (ibid). Dutton and Nainoa (2002) suggest that after the events of 9/11, mobile phones became regarded as essential *lifelines* in the USA:

In reconfiguring access to information and people, wireless media supported the formation of flexible and spontaneous networks of communication on September 11, while they circumvented and undermined more formal hierarchical systems of communication. (2002, p. 243)

Dutton and Nainoa suggest that in this context, mobile phones provided a valuable benefit to users, allowing them to communicate and share information about the emerging security threat with family and friends and with security agencies. Thus similar benefits are associated with mobile telephony during emergencies in developed and developing world contexts, although the social, cultural and situational conditions in which they are used are likely to be highly variable.

In developing world settings, the informal connectivity provided by mobile telephony may be particularly valuable when state service provision is weak. Mobile telephony enables users to access informal assistance and support when formal assistance is unavailable. Examples of these benefits emerge in studies from several country contexts. In India for example, Abraham (2007) notes mobile phones are associated with reducing feelings of isolation and enhancing the security of users in high-risk occupations, such as fishermen. In Ghana, Overa (2006) describes users' reliance on mobiles phones to call for help during frequent vehicle breakdowns and road traffic accidents. Rafael describes this relationship in his examination of user perceptions of mobile telephony in the Philippines,

Like many Third World countries recently opened to more liberal trade policies, the Philippines shares the paradox of being awash with the latest communication technologies, like the cell phone, while being mired in deteriorating infrastructures: roads, postal services, railroads, power generators, and land lines. With the cell phone, one seems able to pass beyond these obstacles. And inasmuch as these

broken, state-run infrastructures represent government ineptitude, passing beyond them gives one the sense of overcoming a state long beset by corruption. (Rafael, 2003, pp. 402-403)

Rotberg and Aker also argue that access to information is particularly critical in weak and failed states, “(t)he weaker the state, the greater the need for ordinary citizens to gain access to and control information that directly affects and impacts their lives” (2013, p. 114). Quantitative studies provide evidence in support of this argument, demonstrating correlations between mobile phone penetration and poor provision of formal services. For example, Best (2011) asserts that recognition of the valuable benefits associated with mobile telephony contributes to their high rates of penetration in crisis-affected countries such as Iraq and Liberia where, “people cling to their mobile phones as tools for security and safety. They use phones to combat crimes, sexual violence, and to help in medical emergencies” (2011, p. 25). Best argues that mobile phones are of particular value for populations lacking access to basic rights and services and living in contexts characterised by weak infrastructure and institutional corruption, supported by their widespread penetration in conflict-affected areas. Other quantitative studies of mobile phone use during periods of crisis in specific country contexts corroborate this argument. Coyle and Thornton (2007) examine mobile phone call rates in Lebanon between July and August 2006, during a period of intense conflict between Hezbollah and Israeli government. They describe an increase in call volumes of almost 40% in the immediate aftermath of the outbreak of hostilities, under challenging physical conditions in which roads, bridges and buildings were bombed and 23% of population migrated away from Beirut. In this crisis-affected setting, mobile networks were used to communicate evacuation plans, locate food and other essential resources and to reunite families (Coyle & Thornton, 2007).

These functions likely contribute to the association between mobile phone use and perceptions of security. Examining user perceptions of this relationship in Canada and Sri Lanka, Senarathne Tennakoon and Taras (2012) argue that mobile phones contribute to users’ peace of mind, particularly women. In the absence of a public emergency service system (available through the 911 emergency call service in Canada), mobiles are highly valued in Sri Lanka for

facilitating personalised emergency response as they enable users to call for help from their personal networks. Their findings also indicate that in both Canada and Sri Lanka, “the mere presence of the communication device seems to bring comfort and peace of mind” (Senarathne Tennakoon & Taras, 2012, p. 305), regardless of their actual effectiveness.

As these examples demonstrate, mobile phones are valued for providing access to informal networks of support around the world. However, in developing world contexts where formal service provision is weak or absent, mobile telephony provides particularly valuable security functions for users.

2.3.3 Mobile phones and disorder

In developing world settings, studies have focused on the relationship between mobile telephony and the organisation and escalation of collective action, both violent (Bailard, 2015; Pierskalla and Hollenbach, 2013; Warren, 2015) and non-violent (Benkler, 2006; Diamond, 2010; Rafael, 2003; Rheingold, 2002). Just as these tools enable users to organise their social and economic affairs and mobilise resources during emergencies, the corollary of these functions is the increased opportunities for the organisation of political action and violence.

Drawing on GIS data on mobile phone coverage and conflict events in Algeria, DRC, Kenya, Nigeria, Uganda and Zimbabwe, Pierskalla and Hollenbach (2013) examine the relationship between mobile telephony and violent collective action. Their analysis reveals a correlation between mobile telephony and outbreaks of violence. They suggest that areas with mobile phone coverage are significantly more likely to experience violent events than those without, controlling for potential confounds such as population density. Pierskalla and Hollenbach (2013) argue that mobile telephony increases the likelihood of outbreaks of violence through reducing organisation and communication costs associated with them.

Bailard (2015) further analyses Pierskalla and Hollenbach's (2013) findings using data from 2007 to 2009 on 599 ethnic groups across 121 countries, to examine whether the availability of mobile phones increases opportunities for violent conflict by reducing communication and organisation costs. Bailard tests the effect of geographic territory (weighted by population density) covered by mobile phone signals on the probability of violent conflict between ethnic groups

and governments, producing findings that corroborate Pierskalla and Hollenbach's conclusions and demonstrate a correlation between mobile phone coverage and violence. Specifically, she finds that,

...with each unit increase in the percentage of an ethnic group's territory that is covered by a mobile signal (weighted by population density), the odds that group will engage in violent conflict against its government increases by .02. (Bailard, 2015, p. 331).

According to this study, the likelihood of violent conflict increases where landline telephone availability is low, and is also affected by population size, rural location and population density, leading Bailard to conclude that "mobile phones increase the likelihood of violent collective action by decreasing specific types of barriers to organization" (2015, p. 13). This relationship between mobile phones and opportunities for crime is central to the present analysis, in which mobile phones are understood to transform opportunity structures for crime, and for crime prevention, in developing world settings.

Further evidence for the association between mobile phones and violence is provided by studies that suggest that certain violent organisations exert pressure on mobile network operators to enhance or restrict mobile coverage in particular contexts (Shapiro & Weidmann, 2012; Vodafone, 2011). For example, in Iraq insurgents have reportedly threatened to take violent action against mobile network operators in response to poor maintenance of mobile networks, while in Afghanistan Taliban insurgents threaten operators to decommission mobile networks at night in order to prevent informants reporting their activities to military forces (Shapiro & Weidmann, 2012). In other contexts, mobile network disruption is deployed strategically to decrease groups' capacity to coordinate their actions (Gohdes, 2015; Morozov, 2011; Richtel, 2011; Southwood 2011), as addressed in 2.4.3.

Reflecting on studies of the association between mobile telephony and violence, Dafoe and Lyall (2015) identify a widespread weakness in these studies, noting the risk of measurement bias associated with data on incidences and rates of violence. While Bailard (2015), Warren (2015) and Pierskalla and Hollenbach (2013) all find positive associations between mobile coverage and violent

attacks based on media reporting of violence, these findings could plausibly demonstrate that mobile coverage increases *reporting* of violence rather than *incidences* of violence. For the purposes of this study this issue is critical. Mobile phones transform both opportunities for the organisation and facilitation of crime (and are crime targets), but they also provide opportunities to increase crime reporting and contribute to crime prevention. While these tools may facilitate the organisation of violence, they simultaneously enable the coordination of responses to it.

Few studies have engaged with the relationships between mobile phones and individual experiences of crime in developing world contexts. An exception is the ethnographic study conducted by Hahn (2012), which sheds light on these relationships, examining the perceived ambiguities associated with mobile telephony in the developing world context of Burkina Faso. Hahn examines perceptions of security associated with the convergence of mobile communications and road networks within the country, arguing that the intersection of physical and virtual connectivity through these two essential network infrastructures is, "perceived as threatening and subversive" (Hahn, 2012, p. 188). Providing specific examples of the interconnection between these networks, Hahn describes how mobile telephony is widely associated with the coordination and perpetration of highway robberies. Hahn's findings suggest that public perceptions of this association are widespread,

There is no precise information about mobiles found in the possession of highway robbers who have been caught. Public opinion, however, holds firm to the idea that mobile phones are the key to the recent increase in this crime. (Hahn, 2012, p. 186)

Hahn describes how perpetrators are believed to identify their victims and coordinate plans in real time using mobile communications, then commit crimes in 'blind spots' where mobile network coverage is weak. Exploiting mobile connectivity enables criminals to organise their physical convergence with victims, prevent victims from calling for help, and escape undetected. This analysis of the relationship between mobile telephony and highway robbery in Burkina Faso provides an interesting example of the ambiguities with which

mobile telephony is viewed in environments perceived to be insecure, and of the ways digital and physical conditions interact to create new opportunities for crime.

2.4 Mobile telephony, security and crime prevention

Crime contributes to income inequality, undermines democracy, and slows the pace of development across Africa and other developing world contexts (World Bank, 2011). Violent crime rates are particularly high across the African continent, and the homicide rate is double the global average (Livingstone, 2013). Mechanisms which enhance crime reporting and prevention are therefore likely to be particularly valuable in these settings, and may have broad impacts on processes of development. Despite this, there has been limited academic engagement with everyday experiences of crime in Africa (Arthur, 1991; Livingstone, 2013; Marenin, 1997). As Livingstone notes, "with so much attention given to violent rebellions and extremist groups, crime in Africa is often overlooked, both by governments on the continent and others" (2013, p5).

Mobile telephony has been widely associated with reductions in crime in many contexts, including African settings (Klick, et al, 2012; Shapiro and Siegel, 2015; Shapiro and Weidmann, 2012). Specifically, mobile telephony provides increased opportunities for crime detection, reporting and prevention. In part, these benefits derive from the opportunities associated with mobile phones for users to directly coordinate responses to, and report on, emerging threats and anti-social activities in real time. Formal agencies that may contribute to crime prevention using mobile phones include the agencies of the state such as police and security forces, NGOs and church organisations, and also external military groups such as the US government forces. Informal responses to crime and security threats may be mobilised through the enhanced connectivity with social networks facilitated by these tools.

2.4.1 Mobile phones enable crime reporting

The growth of mobile telephony in the developed world is widely associated with falling crime rates for many types of crime, particularly violence against individuals. For example the reductions in violent crimes such as rape and assault during the 1990s in the USA have been associated with the increased surveillance and reporting opportunities (Klick, et al., 2012). In African settings,

these applications are understudied, yet are likely to be of critical importance. Sidebottom (2013) has hypothesised that increased access to phones is likely to lead to increases in the proportion of victims reporting crime to the police in Malawi. Media reports also suggest that the increasing availability of mobile communications is widely expected to increase the ability of security forces to combat crime across Africa (Livingstone, 2013; Quarshie, 2014).

While some studies find evidence for an association between mobile telephony and violence (e.g. Bailard, 2015; Pierskalla and Hollenbach, 2013), others suggest that mobile phone coverage correlates with reductions in levels of violence in non-Western settings. Shapiro and Weidmann (2012) draw on mobile phone coverage data provided by network operator Zain⁶ and event data on incidents of violence⁷ to argue that mobile phone coverage correlates with a decrease in insurgent attacks in Iraq. They argue that the benefits of mobile telephony for surveillance by Western and Iraqi forces and for local populations reporting on insurgent activities *outweigh* the uses of these technologies by insurgents for the coordination of group activities and attacks. Shapiro and Weidmann argue that the information-enhancing effects of improved network coverage are more effective at limiting violence than they are at enhancing insurgents' ability to organise.

Acknowledging this dual potential for mobile telephony to increase or reduce levels of violent conflict, Shapiro and Siegel (2015) develop game theoretic models of anti-government collective action to test two competing effects of mobile phones: They enable anti-government actors to coordinate collective action and increase violence, and conversely they enable pro-government civilians to collaborate with security forces to suppress rebels and decrease violence. Shapiro and Siegel test these models under a range of conditions and find that,

When information channels to government are strong relative to gains to rebels' collective action, we expect to see the

⁶ One of the five mobile operators in the country, Zain Iraq operates the majority of towers in central and southern Iraq. Data from 2,416 mobile phone towers are included in the analysis
⁷ 'Incidents of violence' were defined as attacks against Coalition and Iraqi government forces based on 193,264 'significant activity' (SIGACT) reports by Coalition forces, without reference to the scale of the attack, damage or casualties

introduction of cell phones reduce violence even if not much more information is shared. (Shapiro & Siegel, 2015, p. 331)

They argue that the availability of low-risk (i.e. undetectable by rebels) communication channels between civilians and government forces is critical, as under these conditions the intelligence-gathering potential of mobile telephony outweighs its benefits for insurgent groups. Critically however, Shapiro and Siegel argue that the threat of this information sharing can function to reduce violence even when information is not shared, suggesting that in certain contexts, the presence of mobile telephony functions as a deterrent to violence.

This suggests that where mobile phones are available, and mobile communications are perceived to risk-free, populations report insurgent activities and actively contribute to the suppression of rebel actions, reducing crime and insecurity. *Reporting* of crime is therefore contingent on considerations of the associated risks, whether they are perceived to originate from the perpetrators of crime or from the state. These calculations are informed by similar considerations which are likely to inform offenders' decisions to use mobile phones for the *commission* of crime. According to these analyses, where the risk of detection is low, criminals (rebels, in this case) act with impunity. However, where users fear negative implications of reporting crime or rebel action (or by extension, crime), this is likely to reduce reporting rates and compromise the benefits of mobile phones for reporting crime.

2.4.2 Responsibility for security and crime prevention

A key consideration when examining mobile phones for crime prevention concerns the response component of the crime prevention mechanisms. Mobile phones are likely to facilitate crime reporting, but a robust response mechanism is a necessary pre-condition for crime reporting to translate into crime prevention. In the absence of formal emergency response mechanisms such as 999 calls in the UK, users in the developing world are being provided with mobile-enabled information dissemination and helplines which connect with humanitarian and development agencies rather than the response mechanisms of the state, with implications for their security. While these organisations may have adequate capacity to establish and monitor these helplines, the alignment of emergency helplines with response mechanisms is more problematic.

Furthermore, Crowe (2013) expresses concern regarding the collection of personal data by humanitarian actors. She states, “despite being a widely popular development tool, the human rights implications of using mobile phones in development initiatives are not well understood” (2013, p. 4). Crowe identified risks associated with privacy and the protection of personal data, using the example of m-health initiatives collecting and disseminating sensitive personal data through unsecured SMS channels. These risks can also be applied to the use of mobile phones for reporting and responding to crime and insecurity if users’ personal data is insecure.

It is valuable to examine uses of mobile phones during disasters, as these applications have been the subject of considerable research in developing world settings. In 2005, the World Disasters Report acknowledged that, “people need information as much as water, food, medicine or shelter. Information can save lives, livelihoods and resources. Information bestows power” (IFRC, 2005). There are several mechanisms through which ICTD initiatives seek to leverage mobile telephony to enhance communication with populations affected by crises and complex security threats. Perhaps the simplest approach uses mobile phones to facilitate broadcast-style information dissemination. This approach is similar to a radio broadcast, using SMS as a one-to-many model of information dissemination to transmit packets of information directly to each individual mobile user. This approach was widely used after the 2010 Haiti earthquake. In a report detailing best practice, Wall and Chery (2012) describe this as a response to the huge demand for information from affected communities. This formal mechanism was subsequently associated with several negative consequences, including potential security threats. Wall and Chery describe public perceptions of these broadcast-style SMS in Haiti,

The information from NGOs... quickly – and unintentionally – became perceived as ‘spamming’ by subscribers. There was little consistency in content and technical glitches led to an overloaded system, delivery of the same SMS multiple times and long delays in message transmission. (2012, p. 16)

These broadcast-style messages are also criticised for raising false expectations of assistance among recipients and overloading mobile networks

affected by infrastructure damage (Munro, 2012; Wall & Chery, 2012). In recent years, the broadcast-style information dissemination approach initially popular in ICTD initiatives has been replaced with a two-way information exchange model, potentially increasing the agency of crisis-affected populations (Coyle & Meier, 2009; Wall, 2012). The implications for users' security are likely vary according to the model adopted; disseminating information introduces issues of recipient interpretation in addition to the credibility of the source and accuracy of content. However, where a two-way response component is introduced, users themselves are relied upon to provide accurate information to guide the allocation of resources and responses to identified threats, whether these are natural disasters or conflict situations. A 2012 briefing published by BBC Media Action⁸ also describes the growing demand for interactive, two-way communications using mobile telephony during crisis response. In this briefing, Wall raises the question, "Are humanitarian agencies prepared to respond to, help and engage with those who are communicating with them and who demand better information?" (2012, p. 2). This is a key question if humanitarian or development organisations are involved in providing services associated with crisis response, or potentially crime prevention, in developing world settings.

Responsibility for addressing crime threats associated with mobile phones in developing world settings is likely to be complicated by considerations of responsibility and capacity. Examining public safety problems in Western settings Scott and Goldstein note, "...every problem stems from a variety of sources, each of which can plausibly be said to bear some responsibility for its remediation. Much depends on who possesses the skills, knowledge, authority, and resources to implement changes that will effectively reduce or control the problem" (2005, p. 3). They further caution that, "The challenge... (with using mobiles phones to enhance police surveillance) is that greater police accountability is needed to prevent these tools from becoming the source of more efficient extortion or brutality by the police" (Scott & Goldstein, 2005, p. 40). Formal uses of mobile telephony for crime prevention are likely to be informed by user perceptions of the state and its organs. This is particularly relevant in contexts where the state has previously been implicated in the coordination of violence against populations, and the Kenya case study

⁸ Originally called the BBC World Service Trust, renamed BBC Media Action in December 2011

provides a means to investigate this in depth. Supporting literature and analysis are presented in Chapter Five.

Examining responsibility for leveraging mobile phones for crime prevention and for enhancing public security in developing world settings reveals that many stakeholders are currently engaged in this sector. While crime prevention is theoretically the business of government and state, in African settings crime prevention and security-enhancing services using mobile phones encompass a wide range of organisations, as demonstrated in the case studies. Crime prevention services are provided by a range of organisations and agencies, including organs of the state such as police forces, but also NGOs, humanitarian organisation, government agencies, mobile network operators (MNOs) and religious organisations. The roles and responsibilities of these organisations are diverse, and their capacities for responding to incidents of crime and insecurity are also variable. Where formal reporting and response mechanisms, such as the 999 emergency service hotline in the UK, are absent, it is essential to question who is responsible for responding to identified threats. This is particularly critical if mobile telephony increases opportunities for crime in physical places as well as within digital networks.

2.4.3 Mobile phones, security and surveillance

The previous sections have examined the use of mobile phones for crime reporting and prevention. Despite these potential benefits, apprehensions remain over the privacy and surveillance implications of mobile phone use in settings where privacy laws are weak. The literature on the extent and effectiveness of monitoring in Kenya and Uganda is largely speculative (Freedom House, 2013), although media reporting promotes the view that monitoring is widespread across mobile networks (BBC News, 2013; Mukinda, 2013; Mulupi, 2012). Human Rights Watch (2014) describes a similar situation in Ethiopia, noting that perceptions of monitoring are more pervasive than the current monitoring capabilities.

The mandatory registration of SIM cards has been widely introduced across Africa as a measure to reduce the misuse of mobile phones, in response to the increasing involvement of mobile phones in crime on the continent (Donovan & Martin, 2014; Jentzsch, 2012). In 2006, no African countries had implemented a

requirement to register mobile SIM. By 2012, SIM registration was either implemented or planned in over 30 African countries, including both Kenya and Uganda (Jentzsch, 2012). By 2014 this number increased to encompass 49 of the 55 countries in Africa (Donovan & Martin, 2014). Donovan and Martin (2014) raise concerns around the lack of public debate and awareness of the potential implications of SIM registration for surveillance and privacy infringements, describing it as a, "key modality of Africa's emerging mobile-centric surveillance society" (2014, p. 1). Jentzsch (2012) draws on analysis of a dataset of 32 sub-Saharan countries between 2000 and 2010 to argue that SIM registration depresses mobile phone penetration growth. Jentzsch's examination of the relationship between registration and mobile phone penetration growth comprises only a preliminary study, controlling for a range of variables (e.g. GDP growth, market governance), but critically neglecting indicators pertaining to the crime and security context in which SIM regulation is implemented. Nevertheless, the foundational assumption underlying SIM registration is that it increases the accessibility of identifiable customer data for law enforcement agencies seeking to detect crime and fraud (Gow & Parisi, 2008; Jentzsch, 2012).

Critics of SIM registration often focus on the ease with which it can be bypassed and the capacity of the state to use the data collected. For example, Gow and Parisi (2008) argue that mandatory SIM registration is likely to be an ineffective crime deterrence mechanism, and furthermore is not enforceable due to the use of false documentation and a lack of standardisation in its implementation. Jentzsch (2012) makes a similar argument after the widespread implementation of SIM registration, describing how weak identity verification procedures and widespread use of false or invalid identity documentation are likely to reduce the effectiveness of this measure. She further notes that, "at this stage, there is no convincing empirical evidence that mandatory registration in fact systematically lowers crime rates" (Jentzsch, 2012, p. 609). However, mandatory SIM regulation is a relatively recent phenomenon in the developing world, and studies have yet to systematically address the effectiveness of this measure for the reduction of crime.

An emerging corollary of the increased connectivity to public and private agencies, particularly law enforcement and security forces, previously examined

in relation to users' opportunities for reporting anti-social activities, is the increasing vulnerability of mobile users to formal surveillance (Diamond, 2010; Morozov, 2011; Southwood, 2011). Even in Diamond's euphoric analysis of mobile phones as a 'liberation technology' capable of transforming the relationship between citizen and state, he cautions that, "In the end, technology is merely a tool, open to both noble and nefarious purposes" (2010, p. 71). Ultimately, these technologies may render users vulnerable to surveillance and repression while simultaneously providing opportunities for collective action. Morozov (2011) extends this argument, citing examples of state repression in the Arab world, arguing that assumptions regarding the inevitably liberating potential of ICTs are dangerous and must be situated in specific contexts,

...despite the reductionist models that have made many in the West believe that information can destroy authoritarianism, information also plays an instrumental role in establishing propaganda, censorship and surveillance; the three main pillars of Orwell-style authoritarian control (Morozov, 2011, p. 82)

Such authoritarian control has also been employed in Africa. Southwood describes how the Ethiopian government banned the use of SMS after the contested elections of 2005, despite their peaceful (albeit political) use,

In Ethiopia, the opposition party Kinijit was particularly effective at using text messaging to mobilise its supporters and get them to the polling booths. When the election result was announced the government took fright, contested what had happened and then moved quickly to shut down SMS service to ensure that the opposition party could not use it again to oppose them. (Southwood, 2011, p. 8)

This ban remained in force for two years, facilitated by the state ownership of the mobile network operator. Based on interview data and secondary sources, a recent Human Rights Watch report notes that, as a result of the legacy of surveillance,

...ordinary Ethiopians commonly view mobile phones and other new communications technologies as just another tool to monitor them. As a result, self-censorship in phone and email

communication is rampant as people extend their long-held fears of government interference in their private lives to their mobile phone use. These perceptions of phone surveillance are far more intrusive than the reality, at least at present. (Human Rights Watch, 2014, p. 3)

The report calls for action from the government of Ethiopia and from international technology and telecommunications companies, suggesting that companies should, "inquire about the end use and end users of the products and services being provided, especially for 'dual use' products including 'lawful intercept' surveillance software and equipment" (Human Rights Watch, 2014, p. 6). The authors draw attention here to the question of responsibility and legitimate use, calling on the private sector to act in accordance with ethical judgements about the actions of foreign states. The question of responsibility and governance emerges again, and is particularly relevant in light of widespread government practices of monitoring and/or suspending mobile phone networks in Africa. For example in Mozambique, where mobile service providers are also state-owned and regulated, SMS were suspended during food price riots in 2010 in an effort to control dissent (Southwood, 2011). In other contexts, such as during anti-government protests in Egypt in 2011, governments have instructed network operators to suspend services (Richtel, 2011) prompting network operator Vodafone to release a statement in defence of its actions noting that, "the sanctions for non-compliance with such an instruction are imprisonment and/or suspension of Vodafone's operating license" (Vodafone, 2011)⁹ in order to defend their actions against allegations of complicity with the repressive Egyptian regime. Mobile phones provide hitherto unimaginable mechanisms for surveillance in the developing world. These devices may interfere with freedom of expression and undermine the privacy of individual users, particularly in contexts where data protection laws are weak (Crowe, 2013; Hosein & Nyst, 2013; Hussain, 2013; Munro, 2012; Nyst, 2013).

⁹ Vodafone (2014) recently released a report detailing state surveillance in twenty-nine countries in which it operates; describing how governments are able to monitor and track mobile users through direct-access wires tapped into the network in several countries.

2.5 Conclusion

This chapter grounds the scope and scale of mobile phone penetration in developing world settings, investigates patterns of ownership and use, and explores the extension of traditional social networks into virtual, networked environments. Examining the relationship between mobile phones and the security of developing world populations reveals the particular value of these tools during emergency and crisis situations, and examples are provided to substantiate this argument. The anti-social applications of mobile phones are also addressed in this chapter, such as uses for the escalation and organisation of violence and other types of crime. This chapter has also addressed the relationship between mobile phones and crime reporting and prevention in developing world contexts, arguing that informal information sharing behaviours facilitated by mobile phones can reduce the vulnerability of populations to crime and insecurity. Formal applications of mobile telephony to enhance security and reduce crime are also investigated, including use by humanitarian and development organisations in crisis-affected settings. Finally, this chapter has addressed the implications of the increasing penetration of mobile phones for surveillance and user privacy, particularly in contexts where access to rights and data protection measures are limited.

Chapter Three: Frameworks of Analysis

3.1 Introduction

Recognising the rapid and widespread expansion of mobile telephony in the developing world, the previous chapter examined the ways in which the increasing prevalence of mobile telecommunications creates new opportunities for both crime and crime prevention. In this chapter, the theoretical frameworks and analytical tools informing this study are systematically presented. Analyses of the increasing opportunities for mobile-enabled crime, and its prevention, are rooted in the crime opportunity theories guiding situational crime prevention (Cornish & Clarke, 1986), particularly routine activity theory (Cohen & Felson, 1979). These frameworks subsequently inform the analysis of the case study findings in Chapter Seven, examining the ways in which mobile phones inhibit and facilitate crime, analysing and classifying specific crime and security threats affecting developing world users, exploring the social, cultural and situational conditions which facilitate opportunities for mobile-related crime in these settings, and identifying opportunities for crime prevention.

It is first necessary to introduce the history and origins of opportunity theories of crime, and to explain how they depart from traditional offender-oriented approaches to crime and crime prevention. This includes an overview and explanation of the application of situational and opportunity theories to the analysis of crime and crime prevention within the mobile network environment. Mobile phones are associated with crime and security in a range of ways. Specifically, it is proposed that mobile phones;

1. Increase opportunities for crime, both as crime targets and crime facilitators; and,
2. Inhibit crime by increasing opportunities for reporting, detecting and preventing crime

Examining first the increased opportunities for crime, two main categories of crime opportunity are addressed. Firstly, mobile phone handsets provide a popular *target* for traditional acquisitive crimes (Farrell, 2015; Farrell et al., 2010; Hall, 2009; Harrington & Mayhew, 2001; Hoare, 2007; Mailley et al., 2008). Secondly, like other socio-technical innovations, mobile phones are

associated with transforming crime opportunities and *facilitating* the commission of both traditional crimes and new networked crimes (Ekblom & Tilley, 2000; Farrell, 2015; Laycock, 2004; Newman & Clarke, 2003). Crime prevention associated with mobile phones is investigated through the application of situational crime prevention techniques (Cornish & Clarke, 1986), and anti-theft measures using the characteristics of IN SAFE HANDS (Whitehead et al., 2008).

3.2 Opportunity theories of crime and mobile telephony

This thesis draws heavily on opportunity theories of crime and crime prevention, examining the criminogenic, and crime-inhibiting, implications of the increasing penetration of mobile phones in developing world settings. Introducing opportunity crime perspectives, this section also sets out the related *rational choice perspective*, *routine activity theory (RAT)* and *situational crime prevention (SCP)*. These are examined here in relation to mobile phone-related crime, setting the scene for the subsequent analysis of the study findings presented in Chapter Seven. The related *design against crime* approach (Ekblom, 1997) is not addressed here as this thesis does not identify design characteristics associated with mobile phones directly; for this the reader is advised to refer to Mailley (2011). Opportunity and situational theories of crime provide a relevant and solution-oriented framework for the subsequent analysis of the study findings. However, these are by no means the only theories of crime that could be applied to this analysis. For that reason, this section lays out the reasons for the selection of opportunity theories of crime, and describes the core concepts that inform the theory building developed subsequently.

3.2.1 The general theory of crime

Traditional, offender-oriented approaches to criminology and crime prevention examine *criminality* rather than *criminal behaviour*, focusing on the traits and tendencies that are assumed to predispose particular individuals towards criminality. These criminological approaches draw heavily on sociological, psychological and biological theories, and regard criminal tendencies as the challenge to be solved in order to achieve a reduction in levels of crime. The *general theory of crime*, otherwise known as self-control theory (Gottfredson and Hirshi, 1990) posits that poor parenting leads to weak self-control, contributing to criminal and anti-social conduct. Such theories have been

developed to better understand what *motivates* offenders to behave in a criminal manner. This is a valuable approach and one that has been fruitfully applied to a wide range of crime problems. However, for the purposes of this study, the general theory of crime has limited relevance. Understanding and addressing offender motivations cannot explain the emergence of new threats associated with processes of socio-technical change, nor contribute to our understanding of social, cultural and situational conditions contributing to crime opportunities. Furthermore, the general theory of crime is not concerned with the identification of methods of prevention that may be applied to minimise vulnerability to particulate crime threats, which is a key aim of this thesis.

3.2.2 Opportunity theories of crime

Opportunity theories of crime, in contrast with traditional offender-oriented approaches, do not attempt to understand the underlying dispositions of offenders. Rather, they focus on the immediate situation in which crime occurs, and are prevention-oriented. For example, opportunity crime approaches seek to identify key situational conditions that increase the likelihood of a crime occurring in a particular place at a particular time, with the purpose of transforming these conditions to reduce crime. Specifically, the focus of opportunity and situational theories is on,

...the immediate situations in which criminal dispositions, from wherever they may derive, translate into criminal actions; (asking) what social and environmental conditions are conducive to the commission of crime and what makes people liable to commit crime in these conditions? (Tilley and Sidebottom 2015, p332)

The argument that *opportunities for crime may foster criminality*, therefore, represents a radical departure from traditional dispositional approaches. It was first systematically proposed by Mayhew et al. (1976) in *Crime as Opportunity*. Mayhew et al. proposed that crime and deviance may be a response to particular situational conditions, citing Hartshorne and May's (1928) study in which children are given the opportunity to lie, cheat and steal, the findings of which suggest that honesty is an inconsistent trait. In this study it was demonstrated that under certain conditions, the majority of children would

behave in an anti-social manner if they believed that their actions were anonymous and no consequences would result. Extending this to its logical conclusion, Mayhew et al. (1976) recognised that particular stimulus conditions, or crime opportunities, provide the inducements for criminality. They therefore proposed that crime prevention could benefit from an increasing focus on the immediate environment in which crime occurs. This shifted the focus from internal predispositions and socio-cultural factors to the situational conditions in which crime occurs. This focus has the benefit of enabling researchers to investigate the effectiveness of specific measures aimed at reducing or preventing crime, viewing the commission of crime as a response to particular stimulus conditions, or opportunity structures. Opportunity crime theory therefore provides a suitable framework for studying opportunities for both the commission, and prevention of crime associated with the penetration of mobile telephony in developing world settings.

3.2.3 Rational choice

The *rational choice perspective* has been central to the shift in focus from the criminal to the crime event that characterises opportunity theories (Clarke & Cornish, 1983). Crime opportunity theories are premised on the assumption that individuals make rational decisions in their selection of target; deciding whether to commit crimes, and when and how to engage in them. Thus there is no clear distinction between offenders and non-offenders, rather crime opportunities create conditions in which individuals decide to commit particular types of crime.

The rational choice approach views offenders as reasoning agents drawing on information from the potential crime scene in order to make cost-benefit assessments about crime. This information is inherently bounded and imperfect, but nevertheless informs their perceptions of the real and perceived *effort, risk and reward* associated with the commission particular crimes in particular contexts, which structures their decision-making process (Cornish & Clarke, 1986). Although offenders are not assumed to make perfect calculations, nor to have access to full information about any given situation, they can generally be expected to act rationally. This includes being open to dissuasion if perceived risks become too high, and reacting to temptation to commit a crime where perceived effort is low and expected reward high. This approach is at the heart of opportunity crime approaches, and forms a foundational theory guiding the

development of techniques of SCP. It also provides a pragmatic lens through which to interpret the study findings, accepting that both crime-facilitating and crime-inhibiting features of mobile phones are operationalized according to the rational calculations of reasoning individuals.

Examining the perceived effort associated with mobile phone crime, the commission of these crimes is currently characterised by relatively low effort in relation to the anticipated risks and rewards. Crime can be committed through mobile phone networks with low start-up and administration costs. Motivated offenders with access to mobile phone networks need only to select a victim and compose a convincing narrative, enabling them to transmit violent or fraudulent content with ease. The effort entailed is minimal compared to planning and committing a crime in a physical environment. Similar to other networked digital technologies, mobile phones act as a *force multiplier* (Yar, 2013), enabling individuals with minimal resource to create crime impacts on numerous victims. No physical hardship is entailed in the commission of crime within mobile networks, and even the effort associated with concealing crimes is nominal: compromised handsets or identities may be discarded after use.

Mobile telephone networks provide a relatively low-risk environment for the commission of crime for several reasons. Offenders are physically disconnected from their victims and may conceal or assume false identities reducing the risk of detection. Handsets may be easily destroyed or disposed of to conceal evidence of wrongdoing. Mobile phone related crimes are also characterised by relatively high rewards. Mobile handsets may be characterised as 'hot' products' which fulfil the CRAVED criteria for popular crime targets, addressed subsequently in 3.2.8.

3.2.4 Routine activity theory

Developing the argument that increasing opportunities for crime increase crime, *routine activity theory* (Cohen & Felson, 1979) proposes a deceptively simple account of the crime event. RAT posits that three essential components are needed for direct contact, predatory crime to occur. These comprise the convergence in space and time of a likely or *motivated offender* and a *suitable target* in the *absence of a capable guardian*. Moreover, these three elements - offender, target, and the absence of a guardian - can be brought together as a

side effect of the rhythm of everyday life. RAT provides a theoretical framework for analysing spatio-temporally situated crime events. While this formula is simple, it provides an elegant explanation for the way that changes in any of these three elements can change the frequency and patterns of predatory crime.

RAT was developed to explain the increasing crime rates in the US in the aftermath of World War II by Cohen and Felson (1979), who attributed the post-war rise in crime to the accompanying societal changes that increased *opportunities* for crime. Cohen and Felson (1979) suggested that that the economic prosperity and consumerism which characterised the post-war period, combined with the increasing engagement of women in the workforce, created conditions in which valuable possessions were left in unattended homes. This transformed the dynamics of the offender, target and guardian by increasing crime targets and reducing guardianship, increasing opportunities for crime. These environmental conditions were conducive to increasing burglary, as offenders reacted to new opportunity structures. Although the underlying logic of RAT is simple, it nevertheless has important implications for understanding the distribution of crime and developing preventative strategies which focus on the target, offender or guardianship of the space, particularly during periods of socio-economic transformation when changing patterns of daily life herald new opportunities for crime.

Since the original conceptualisation of RAT, Felson and Clarke (1998) and Felson (1992) have demonstrated that even crimes of emotion, and crimes which appear irrational or senseless, can be fruitfully examined in terms of routine activity theory if the details of the events leading up to the crime offence are known, and if crimes are viewed from the perspective of the offender. For example, gangs are more likely to attack other gangs with fewer members than their own, taller people are more likely to attack shorter people, and aggressive responses to insults become more likely as the proportion of observers increases (Felson & Clarke, 1998). Thus even seemingly random outbreaks of violence broadly adhere to rational assessments that can be interpreted the effort, risk, reward framework.

RAT is therefore a useful framework through which the traditional acquisitive crime of mobile handset theft can be conceptualised. Applying this approach, the rapid and widespread penetration of mobile phones in developing world settings (described in the previous chapter) creates an increase in *crime targets* in physical and digital spaces, and is therefore likely to increase opportunities for acquisitive crimes. It may be further postulated that in resource-poor settings characterised by low availability of other suitable crime targets, the widespread growth in availability of mobile phones is particularly likely to cause an increase in crime, addressed in Section 3.2.8.

As demonstrated in the preceding chapter, mobile telephony is widely acknowledged to have catalysed shifts in users' routine activities and transformed access to information and resources in developing world settings. Furthermore, examining individual *users* as crime targets, the increasing connectivity facilitated by mobile telephony increases opportunities for social interaction and provides potential offenders with access to users in contexts of limited guardianship. These interactions may occur in digital or physical spaces, as mobile phones provide a mechanism through which physical encounters can be coordinated. RAT may therefore be adapted to analyse the increasing access to virtual connectivity and networking enabled for mobile phone users, who may be variably conceptualised as *suitable targets* and as *likely or motivated offenders*. In this regard, RAT also provides a framework for examining the protection of mobile phone users by capable guardians, an argument developed further subsequently.

Although Cohen and Felson (1979) originally focused on the role of *guardians* in protecting targets, Felson (1986) added the category of *handlers* who are in a position to influence the behaviour of the potential offender. Handlers, who may be parents, friends, teachers or colleagues, represent individuals whose social bond with the offender may be able to influence their behaviour and can divert criminals from committing crime. Guardians may include police officers and security staff, but also individuals may provide informal guardianship for each other. Thus a handler may be able to prevent crime events from occurring even in situations where a potential offender comes into contact with an insufficiently guarded suitable target (Felson, 1986). *Place managers* comprise guardians who function to protect places against crime. SCP techniques are generally

applied by *place managers* (Eck and Eck, 2012). Recognising that the spatial distribution of crime demonstrates consistent patterns, it is predictable that crime is concentrated at particular high-crime locations. These have been variously termed *crime generators*, *crime attractors* (Brantingham & Brantingham; 1981; 1984; 2008), and *crime hotspots* (Eck et al., 2005). Studies have also shown that crime concentrations generally remain stable in particular locations, and furthermore that reducing crime in these locations can effectively reduce crime overall (Weisburd et al. 2004). Recognising that, traditional opportunity and situational crime studies examine crime concentrations in physical places such as streets, high schools and subway stations. This is likely to be relevant for handset theft that occurs in physical settings, where place managers or handlers may effectively function to reduce crime opportunities. However, these spatially oriented approaches may be of less relevance for the analysis and prevention of networked crimes, unless the location of offenders is known.

RAT is often presented as a crime triangle, which provides a useful conceptual tool to organise the necessary elements of the crime and the factors that may inhibit or protect each of these elements (see figure 3). There are two layers to the triangle. The inner triangle comprises the necessary conditions for a crime to occur; one face of the triangle represents the likely offender, another the suitable target or victim, and the third the place bereft of a capable guardian. The outer triangle includes components whose presence might inhibit or prevent crime from occurring; a guardian to protect the target, a handler to restrain or inhibit the offender, and a place manager to provide security in physical settings that may otherwise facilitate crime.



Figure 3: Problem analysis triangle, Centre for Problem-Oriented Policing (2017)

Chapter Two presented evidence from studies demonstrating that mobile phones provide opportunities for socialisation which may not be regulated by traditional behavioural norms and enforcement mechanisms. For example, in this private, digital environment, young women in Mozambique may coordinate sexual relationships to access economic resources (Archambault, 2013). In India mobile phones facilitate access to alternative sources of information beyond traditional authorities and enable users to bypass social hierarchies (Jeffrey and Doron, 2013), and in Kenya they contribute to physical isolation as users retreat to virtual environments unstrained by traditional behavioural codes (McIntosh, 2010). In these analyses, mobile telephony provides new opportunities for socialisation beyond traditional boundaries (Archambault, 2013; Castells, et al., 2007; Jeffrey and Doron, 2013; Ling, 2004; Porter, 2012; Tenhunen, 2008). These new, digitally-enabled routine activities are also likely to create new opportunities for crime. Where mobile phones provide a private communication channel in traditional societies, the absence of guardians and handlers who regulate or control the behaviour of users may facilitate, and even catalyse crime events as crime targets are unprotected and motivated offenders unrestrained. In these digital settings, furthermore, the inter-personal nature of communications may provide conditions in which the digital environment, or virtual place, is not directly protected by a place manager. As Eck explains, “a

crime is highly likely when an offender and a target come together at the same place at the same time, and there is no one nearby to control the offender, protect the target, or regulate conduct at the place” (2003, p88). Mobile phone networks enable the convergence of offenders and targets in an invisible, largely unregulated terrain; lacking informal and formal surveillance mechanisms.

Within mobile network terrains, routine activities theory provides a useful conceptual framework for analysing the transformations in the patterns and dynamics of user interactions heralded by the increase in mobile connectivity. Thus, while the increase in handsets may catalyse crime by increasing the availability of crime targets, while the associated connectivity heralds a rapid and fundamental shift in users’ routine activities, in both physical and digital environments. In this analysis, mobile phones provide new criminogenic digital environments that interact with social, cultural and situational conditions to create new opportunities for crime.

3.2.5 Crime facilitators

Returning to the literature reviewed in the preceding chapter, existing studies on the relationship between mobile telephony and insecurity, particularly outbreaks of violence and civil unrest, may also be analysed with reference to changing opportunity structures for the commission of crime. For example, Pierskalla and Hollenbach (2013) and Bailard (2015) argue that the penetration of mobile phones increases the prevalence of outbreaks of violence. From an opportunity perspective, these studies demonstrate that the increasing penetration of mobile telephony provides new opportunities for crime, enhancing the ease of communication and coordination and financial transfers (Hahn, 2012; Shapiro & Weidmann, 2012; Vodafone, 2011). Mobile phones even provide a mechanism for the anonymous payment of kidnapping ransoms, and have been associated with increased opportunities for organised crime and terrorism (Shaw and Reitano, 2013). Examining the association between mobile phones and social disorder, an emerging body of research identifies correlations between mobile telephony and outbreaks of violence and crime in the developing world (Bailard, 2015; Best, 2011; Dafoe and Lyall, 2015; Pierskalla and Hollenbach, 2013; Shapiro and Weidmann, 2012; Shapiro & Siegel, 2015; Warren, 2015). Although these authors do not explicitly draw on opportunity crime theory in

their analysis, they argue that the increased horizontal coordination enabled by mobile telephony facilitates the organisation of activities (e.g. protests) that can escalate into violence. Furthermore, they suggest that rebels and insurgents exploit mobile networks to recruit, motivate and discipline followers and to facilitate violent activities. Thus mobile phones may be analysed to reduce the effort associated with the organisation and commission of traditional types of crime and insecurity, in this case violence and insurgency, while also increasing the awareness space of users and facilitating the commission of a wide range of crimes. Examining these applications through the lens of opportunity theories of crime, mobile phones may be variously regarded as *crime multipliers* (Felson, 2002) and as *crime facilitators* or *crime resources* (Vander Beken & Balcaen, 2006; Farrell, 2015; Harrington & Mayhew, 2001; Hoare, 2007; Laycock, 2004; Newman & Clarke, 2003; Wall 2005; Wall, 2007), in addition to *crime targets*.

For the purposes of this study, the term *crime facilitators* is used to encompass the various ways that mobile phones may facilitate the commission of a wide variety of crimes. Crime facilitators, proposed by Clarke (1992), are a further development of the RAT approach that has particular relevance for this analysis. These fall into three categories; physical, social and chemical. Chemical facilitators such as drugs and alcohol, are beyond the scope of this analysis. Likewise social facilitators, such as peer pressure, are not explicitly addressed here. Mobile phones, along with objects such as cars and weapons, may be regarded as *physical facilitators* of crime (Clarke, 1992). Cars may be used to transport offenders to and from the location of an offence, while weapons may be used to threaten or injure victims. Thus mobile phones may be regarded as physical facilitators of crimes and the increasing number of mobile phones is therefore likely to increase their availability for offenders. It is worth acknowledging that Roman and Chalfin (2007) propose the term 'iCrime' to address the increasing convergence of new information communication technologies, including mobile phones, smartphones, tablet computers, laptops and similar electronic goods. However, the proprietary implications of this term preclude its use here, and furthermore this study addresses the use of both advanced and basic model handsets. In light of this, mobile phones and motor vehicles may be analysed analogously. Both cars and mobile handsets represent popular crime targets, but they may also be utilised as crime

facilitators or *multipliers* inasmuch as they create new opportunities for the commission of a wide range of crimes. However, information communication technologies (ICTs) provide a wide range of crime opportunities, and provide conditions of anonymity and immediacy which render them particularly suitable for would-be offenders.

3.2.6 Process of socio-technical change and crime opportunities

According to crime opportunity theory, processes of socio-technical change are likely to create new opportunities for crime (Ekblom & Tilley, 2000; Farrell, 2015; Laycock, 2004; Newman & Clarke, 2003). The most self-evident manifestation of this associated with the increasing penetration of mobile phones is the increase in crime targets; in this case mobile phone handsets. However, technological developments also create situations in which crime opportunities emerge, and which present new challenges for law enforcement. As Laycock explains,

"... it is clear that the rapid development of new products and services ... provide new opportunities for crime. These new products may be the targets of theft but they may also facilitate offending by making offences easier to commit or making detection more difficult" (2005, p41)

Mobile phones are a particularly salient example of such a product, although the relationship between situational theories of crime and crime prevention and technology is well established.

It is only possible for offenders to exploit potential opportunities for crime when they are in possession of the necessary resources. Ekblom and Tilley (2000) highlight the importance of considering offender resource needs, availability, development, and distribution with particular attention to social-technical change. This approach proposes that practitioners should examine the *conjunction* of the immediate situational conditions and factors that facilitate change, and the immediate conditions in which an offender is *likely* to offend. Mobile phones may both increase the scope and scale of crime (e.g. providing access to high numbers of victims) and increase opportunities for the commission of a wide range of crimes (e.g. facilitating the coordination of

robberies). Thus they provide a valuable resource for offenders, beyond their attractiveness as a crime target.

For example, the increasing availability of motor vehicles transformed opportunities for crime; providing a new target for acquisitive crimes and simultaneously facilitating the commission of a wide range of traditional crimes (Newman & Clarke, 2003). Cars may be used to rapidly transport offenders to and from the scene of a crime, to evade authorities, and to transport stolen items that may be too large, heavy or cumbersome to remove on foot. Addressing the acquisitive crime is relatively straightforward; crime prevention measures which make cars more difficult to steal (such as immobilisers, alarms, etc.) have reduced the suitability of cars as targets for crime and have been found to reduce rates of car theft (Farrell, Tseloni, & Tilley, 2011). However, the installation of steering column locks on new vehicles did not change reported rates of car theft overall. Rather, theft rates for older vehicles increased corresponding with reductions in the number of new cars stolen (Mayhew et al, 1979). The success of the car industry in preventing vehicle theft is widely presented as a leading example of the importance of involving industry in crime prevention. Improvements in vehicle security have led to falling levels of car theft in many developed countries, often by around 75% (Farrell et al., 2011). Farrell (2015) further notes the need both to regulate and to incentivise industry to overcome market failures and encourage their engagement in crime prevention.

Newman and Clarke (2003) argue that the revolution in information technology is at the apex of societal change, ascribing it a significant role in spawning new opportunities for crime. These authors describe the origins of this revolution in socio-technical change as the invention of writing, a development that transformed opportunities for information storage and transmission. Personal computing, and later the networked structure of the Internet, introduced as a by-product yet more opportunities for crime (Newman & Clarke, 2003). In developing world settings, as the previous chapter demonstrates, mobile phones are the most widely available technological device. Accordingly, it may be postulated that these tools are likely to comprise crime facilitators in providing a wide range of new opportunities for crime in these settings.

Specifically, mobile phones facilitate the extension of both potential victims' and offenders' digital presence into new virtual arenas, providing new crime opportunities with distinct characteristics from those associated with physical environments (Clarke, 2004; Ekblom & Tilley, 2000; Newman & Clarke, 2003). Mobile phones, like other networked technologies, facilitate the commission of a wide range of networked crimes, including fraud and deception, spam, sending obscene or offensive content, pornography, information theft, concealment of criminal activities, cloning handsets and SIM cards to mask activities or access free calls, premium rate service fraud, and even the use of mobile phones for the remote detonation of bombs (Vander Beken & Balcaen, 2006; Wall 2005; 2007). Thus, as mobile phone access and use continues to expand, so too do opportunities for crime associated with these socio-technical transformations. It is also likely that crime, and crime prevention, associated with mobile phone networks is dynamically evolving as more advanced technologies and increasing numbers of novice users contribute to transforming crime opportunities in these settings (Farrell, 2015).

Whitehead and Farrell (2008) argue that the relationship between technology and crime is so widely recognised that engineers and designers should work to design out crime risks associated with new technologies. They call for participatory planning to pre-empt the potential crime wave associated with new technological developments. Examining the use of mobile phones as 'smart wallets', Whitehead and Farrell argue that ... "A mobile phone wallet is a mobile phone handset that incorporates some means of making electronic payments for goods and services" (2008, p212). While increasingly popular in Western countries (ibid), these applications are unlikely to become popular in the majority of developing world settings where electronic payments remain uncommon and large populations are unbanked, as addressed in Chapter Two. However, the increasing popularity of m-banking may offer related opportunities for crime. Whitehead and Farrell (2008) acknowledge both the increasing value of handsets which use 'smart wallet' technology, and concomitant opportunities for the theft of user 'identity' and financial information contained within the handset. In developing world settings where mobile handsets are perceived as valuable tools for the storage of personal information, the theft of user identity

and personal information, including financial information, is a relevant concern regardless of the technical capabilities of the handset.

3.2.7 Crime in networked environments

Analyses of cyber-crime provide a useful entry point into the investigation of the networked crime facilitated by mobile telephony, particularly as they incorporate a broad spectrum of crimes committed through electronic means. These range from fraud to cyber-stalking, and encompass purely electronic crimes as well as those that combine physical and digital components. Tilley and Sidebottom argue that cyberspace provides a rich agenda for future situational crime research as,

“...a novel location for crime, with novel crime opportunities through new types of risky space, new types of awareness space, new forms of crime, and new challenges for guardianship and handling” (2015, p.345)

This thesis extends this argument, drawing on primary case study data, to investigate crime threats, vulnerabilities and prevention mechanisms associated with mobile telephony in the developing world

Scholars note that cyber-crime lacks a standardised, accepted academic definition (Gordon & Ford, 2006; Wall, 2005; 2007; Yar, 2013), but a widely-accepted working definition is, “any crime that is facilitated or committed using a computer, network, or hardware device” (Gordon & Ford, 2006, p. 14). Wall provides an alternative definition, regarding cyber-crimes as “criminal or harmful activities that are informational, global and networked” (Wall, 2007, p. 4). These definitions share a common set of assumptions; that the digitally networked terrain of cyber-space provides new opportunities for criminal and anti-social behaviour. The inclusion of both crimes *facilitated* and those *committed* using cyber-technology is critical for the present analysis. This inclusive definition acknowledges the overlap between digital and physical terrains, and this overlap is particularly important for this analysis of mobile phone-enabled crime. However, both of these definitions may, to some extent, be applied to crimes committed through mobile phone networks. A particular value of Wall’s (2007) definition is that it acknowledges both activities specifically defined as illegal as well as those deemed to be deviant but lacking formal legal definitions and

sanctions, recognising that crime and deviance cannot always be separated in criminological enquiry. This is particularly useful in the context of mobile phone crime and security, where transformations in both the technology and the associated opportunities for crime are likely to be dynamic and fast-changing, and the legal classification of particular activities as 'crime' may be outpaced by the speed of their development.

Although some critics argue that the cyber-environment merely provides new tools for the perpetration of traditional crimes, characterised as *old wine in new bottles* (Grabosky, 2001), more compelling arguments suggest that the unique environment provided by networked technology has a profound impact on social interactions, creating fundamentally new types of crime (Gordon & Ford, 2006; Wall 2005; 2007; Yar, 2013). One popular method of classification distinguishes between cyber-crimes according to the role played by technology in their perpetration (Wall, 2005; Yar, 2013). Wall proposes an elimination test to distinguish between three types of cyber-crime, suggesting that *traditional crimes* are those, "in which the internet is used, usually as a method of communication, to assist with the organisation of a crime (for example, by paedophiles, drug dealers etc.)" (Wall 2005, 311). Critically, these types of crime are likely to persist in the absence of cyber-technologies. The second category comprises *hybrid crimes* such as fraud and deception. In the absence of the Internet, hybrid crimes persist but in reduced numbers. The final category concerns true *cyber-crimes* whose perpetration are fundamentally reliant on digital technologies, such as spamming. These broad categorisations provide a useful way to distinguish between traditional crimes and cyber-crimes, recognising the emergence of hybrid crimes *facilitated* but crucially *not determined* by networked technologies. Despite the popularity of this model, the separation of traditional, cyber and hybrid crime types creates a system of classification utilising broad categories with limited analytical application. Nevertheless, this model provides a means to conceptualise different crime types associated with mobile phones as networked technologies, and is examined in light of the identified crime threats in Chapter Seven.

3.2.8 Crime targets as CRAVED

Arguably the most straightforward crime associated with mobile telephony is the acquisitive crime of handset theft. The majority of existing studies investigating

the relationship between mobile phones and acquisitive crime have emerged from Western settings, where a growing body of evidence demonstrates positive correlations between mobile phones and rising rates of acquisitive crime (Farrell, 2015; Farrell et al., 2010; Hall, 2009; Harrington & Mayhew, 2001; Hoare, 2007; Mailley et al., 2008). Handset theft has been included in the British Crime Survey (BCS) following Harrington and Mayhew's (2001) Home Office research study, which first illuminated the prevalence of this phenomenon in the UK. Data on mobile phone theft in the UK is therefore widely available, compared to other country contexts (Farrell, 2015).

Studies also suggest that mobile phones are a popular crime target elsewhere. The increasing prevalence of mobile phones is associated with increasing rates of thefts and robberies across Europe and the USA (Farrell, 2015; Farrell, et al., 2010; Mailley, et al., 2008), and mobile phones are now one of the most frequently stolen items in Western countries (Mailley et al., 2008). It has been demonstrated that despite the overall 'crime drop' phenomenon in Western industrial countries during the 1990s and early 2000s, there has been a simultaneous increase in mobile phone theft and Internet-related crimes (Farrell, et al., 2010).

Various approaches have been proposed to identify the characteristics and attributes that inform target suitability. Felson (1998) proposes these key characteristics to be *value*, *inertia* (portability), *visibility* and *access*, using the acronym *VIVA*. Felson demonstrates how changes in temporal patterns of theft targets correspond with the availability of consumer goods with these characteristics. This simple model was subsequently replaced by the CRAVED criteria. The CRAVED model characterises 'hot' products according to the attributes of being Concealable, Removable, Available, Valuable, Enjoyable, and Disposable (Clarke, 1999). These criteria have been proposed to classify particularly attractive crime targets as 'hot' products (Clarke, 1999), and have become a popular heuristic within crime science. CRAVED emerged from RAT (Cohen & Felson, 1979) and the rational choice perspective (Cornish & Clarke, 1986), of which a core component is the availability of a suitable target.

It may be hypothesised that in developing world settings there are fewer consumer goods fulfilling the CRAVED criteria. Mobile phone handsets are

lightweight, portable, high value goods satisfying the CRAVED criteria associated with 'hot' products (Sidebottom, 2013). Limited research has been conducted on CRAVED goods in developing world settings, with the notable exception of Sidebottom's (2013) examination of livestock theft in Malawi. Recognising that mobile phone handsets fulfil the characteristics of CRAVED goods, they are likely to be even more popular crime targets than in Europe and the USA. Unlike Western Europe and the USA, reliable data on handset theft in developing world settings is scarce (Farrell, 2015; Sidebottom, 2015), and it is beyond the scope of this study to address that deficit. However, as mobile handsets are classic CRAVED goods in resource-poor settings characterised by limited crime targets, it is relevant to acknowledge that this type of crime is likely to occur frequently, and to examine the constellations of opportunity which create facilitating conditions for this.

Newman and Clarke (2003) have extended the application of the CRAVED characteristics to examine how *information* may be regarded as a hot product within the e-commerce environment. They provide a range of examples such as software piracy and counterfeiting which targets intellectual property within software, videos and music, and identity theft that targets personal data contained within databases or customer records. They also identify crimes which may also affect users of mobile phones such as electronic funds transfer fraud, stalking, fake lotteries and prizes, and harassment. The authors' note that the information contained within a product such as a personal computer (or a mobile phone) may be characterised by attributes similar to the hot products defined by Clarke (1999). Newman and Clarke note that this information is, "a constantly moving target" (2003, p70) which exists in space during the process of its transmission. They acknowledge that the concept of information as a product is analytically complex, but argue that it is vulnerable to criminal misuse. They note, however, that "the complexity and variety of information, unlike a simple consumer item, makes it especially difficult to suggest specific design changes, such as safety locks on handguns, that could eliminate or reduce its inherent vulnerability" (Newman & Clarke, 2003, p73). Newman and Clarke's focus is on e-commerce crime, and they do not address mobile telephony directly. However, examining information as a crime target is useful

for this analysis, and is particularly relevant in light of the development of m-banking services gaining in popularity in developing world settings.

3.3 Opportunity theory and crime prevention

Recognition that offenders respond to changing situational conditions (including processes of socio-technical change) that facilitate, or impede, the commission of crimes has significant and far-reaching implications. Examining crime as a function of circumstances, rather than particular social or psychological traits and tendencies associated with criminal dispositions and behaviours, provides opportunities for the development of crime prevention approaches that target these situational conditions (Clarke, 1980). As Tilley and Sidebottom note,

The applied focus of situational criminology lies in identifying situations where crime is commonplace and figuring out ways to change them so that crime is reduced (2015, p332-333)

In support of crime opportunity theory, Mayhew et al. (1976) compiled and analysed a range of examples in which reduced opportunities for criminal behaviour led to reductions in crime. These examples include the effectiveness of steering column locks on reducing opportunities for car theft in newer vehicles, and increasing surveillance as a mechanism to reduce opportunities for vandalism on public buses (ibid). Arguing that changing opportunity structures can even prevent (some) individuals from committing suicide, Clarke and Mayhew (1988) present evidence that a specific change in opportunities contributed to a reduction in the number of suicides in the UK. They demonstrate a relationship between that changes in domestic gas supply, in which (toxic) coal was replaced by (non-toxic) natural gas, and reduced rates of suicide. Clarke and Mayhew argue that by removing a convenient and painless method of suicide, this shift in gas supply actually contributed to an overall reduction in the number of suicides committed in the UK. Although of course alternative methods for committing suicide remained available, and determined individuals are not prevented from taking their own lives, the removal of the domestic gas option nevertheless led to a substantial reduction in the total number of suicides. Drawing on the *effort, risk, reward* structure, we see that by removing a relatively low effort, low risk, high reward (cheap, painless, available, effective, etc.) method of committing suicide, the conversion to non-

toxic natural gas adjusted the effort-risk-reward ratio sufficiently to reduce the overall suicide rate (Clarke & Mayhew 1988).

The argument presented in this thesis is that while mobile phone networks can increase opportunities for crime, under particular conditions they may also provide *opportunities for crime prevention*. Klick, MacDonald and Stratmann (2012) argue that mobile phones provide a crime deterrence effect by increasing the costs associated with committing crime. This 'underappreciated link', they suggest, is responsible for the decline in cases of assault and rape in the 1990s, during which period mobile phones increased opportunities for surveillance and the risk of apprehension. As demonstrated in Chapter Two, the uses and applications of mobile phones in developing world settings are diverse, with far-reaching implications for social, economic and political development. It is therefore unclear whether these same crime-inhibiting functions associated with mobile phones in Western settings are also likely to be manifest in non-Western settings. In particular, it is important for interventions designed to capitalise on the benefits of mobile phones to recognise, and integrate, design features which maximise the crime-inhibiting potential of mobile phones while reducing their crime-facilitating potential.

Other studies examined in Chapter Two also demonstrate crime reduction mechanisms associated with mobile phones that may be fruitfully analysed through the lens of crime opportunity. For example, Shapiro and Weidmann (2010) describe how Taliban insurgents in Afghanistan have threatened mobile operators to force them to decommission mobile networks at night in order to prevent informants from reporting their movements to law enforcement. This suggests that the Taliban recognise the crime prevention opportunities provided by these networks, and seek to alter the *effort, risk reward* balance associated with *reporting* crime. Shapiro and Siegel's (2015) arguments about the relationship between mobile telephony and insurgency may also be interpreted through this lens. Specifically, they note that mobile phones are valuable tools for members of the public to report rebel action specifically because they are undetectable by rebels. Accordingly, mobile phones may be analysed as low-risk communication channels that increase reporting and therefore contribute to crime detection and prevention. Mobile phones therefore may be analysed as changing the risk-effort-reward ratio associated with *reporting* crime.

3.3.1 Situational crime prevention

SCP aims systematically to reduce specific crimes by focusing on their near (situational) causes. This approach emerged during the 1960s and 1970s in the UK Home Office Research Unit, and was developed as a practical alternative to traditional offender-oriented approaches to crime prevention (Clarke & Cornish, 1983). In a radical departure from crime prevention mechanisms targeting 'root causes' of crime, SCP focuses on *modifying the conditions in which specific crimes occur* in order to reduce rates of crime through a range of techniques (ibid). SCP is defined by Clarke as,

...opportunity-reducing measures that (1) are directed at highly specific forms of crime, (2) involve the management, design or manipulation of the immediate environment in as systematic and permanent a way as possible, (3) make crime more difficult and risky or less rewarding and excusable as judged by a wide range of offenders. (1997, p. 4)

Tilley (2010) defines successful SCP mechanisms as those that create a sustained impact through increasing cost or effort in relation to the anticipated rewards. He notes, "success is achieved if a wide range of offenders find the balance of effort, risk and reward sufficiently altered that they decide not to commit the offense" (Tilley, 2010, p. 106).

The roots of SCP approaches have been traced back, among others, to the increasing disenchantment with the 'pathological' models of offender behaviour and an increasing interest in the environmental causes of crime (Clarke, 1995; 1997). Transforming the environmental conditions in which crime occurs offers further opportunities for successful crime prevention, as an alternative to addressing the inclinations and proclivities of individual offenders. Ekblom and Tilley associate this shift with the recognition that;

...changing offenders, or potential offenders, was seen as too difficult to achieve; changing immediate crime situations promised easier, more circumscribed implementation and better prospects of short-term, measurable success (2000, p 376)

Crime prevention initiatives that increase the perceived risk or effort or reduce the anticipated rewards, may alter the calculations of potential offenders, and function to reduce or prevent crime. The perceived benefits associated with a particular crime may take many forms, including thrills, power and sexual gratification as well as material gain. Moreover, Clarke and Homel (1997) include internal psychological processes as a component of reasoning, including feelings of shame and guilt. Recognising that offenders are motivated by very different goals to commit car theft, burglary or rape, changing the environmental conditions of crime to alter offender calculations can nevertheless offer effective prevention mechanisms for particular types of crime. The model of *risks, efforts and rewards* associated with the rational choice perspective provides the foundation for the classification of a wide range of specific situational techniques, augmented by the subsequent inclusion of the additional categories of *removing excuses* (Clarke & Homel, 1997) and *reducing provocations* (Cornish & Clarke, 2003; Wortley, 2001).

Although the model of SCP may appear simple, this simplicity belies impressive success rates. Reviews of SCP case studies addressing crime threats ranging from robbery and assault to fraud and domestic violence have demonstrated that the majority of initiatives utilising these methods of crime control are effective. For example, Smith et al.'s (2002) review 142 SCP case studies across 211 sites, found the majority to have been effective. Guerette and Bowers (2009) found a 75% success rate among 206 SCP evaluations, while Bowers and Johnson (2016) demonstrate that SCP initiatives have had a positive impact on crime across 63 studies. SCP provides a valuable framework through which to investigate and categorise crime prevention opportunities and techniques associated with mobile phones in developing world contexts.

3.3.2 Techniques of SCP

Within the five main categories of increasing effort and increasing risks and reducing rewards, provocations and excuses, sub-categories of opportunity-reducing techniques have been added. These are detailed in table 1 below, providing examples for each of the sub-categories of crime reducing technique.

Table 1: 25 Techniques of SCP (drawing on Cornish & Clarke 2003)

Increase perceived effort	Increase perceived risks	Reduce anticipated rewards	Reduce provocations	Remove excuses
1. Target harden <ul style="list-style-type: none"> • Steering column locks and immobilisers • Anti-robbery screens • Tamper-proof packaging 	6. Extend guardianship <ul style="list-style-type: none"> • Take routine precautions: go out in group at night, leave signs of occupancy, carry phone • “Cocoon” neighbourhood watch 	11. Conceal targets <ul style="list-style-type: none"> • Off-street parking • Gender-neutral phone directories • Unmarked bullion trucks 	16. Reduce frustrations and stress <ul style="list-style-type: none"> • Efficient queues and polite service • Expanded seating • Soothing music/muted lights 	21. Set rules <ul style="list-style-type: none"> • Rental agreements • Harassment codes • Hotel registration
2. Control access to facilities <ul style="list-style-type: none"> • Entry phones • Electronic card access • Baggage screening 	7. Assist natural surveillance <ul style="list-style-type: none"> • Improved street lighting • Defensible space design • Support whistleblowers 	12. Remove targets <ul style="list-style-type: none"> • Removable car radio • Women’s refuges • Pre-paid cards for pay phones 	17. Avoid disputes <ul style="list-style-type: none"> • Separate enclosures for rival soccer fans • Reduce crowding in pubs • Fixed cab fares 	22. Post instructions <ul style="list-style-type: none"> • “No Parking” • “Private Property” • “Extinguish camp fires”
3. Screen Exits <ul style="list-style-type: none"> • Ticket needed for exit • Export documents • Electronic merchandise tags 	8. Reduce anonymity <ul style="list-style-type: none"> • Taxi driver IDs • “How’s my driving?” decals • School uniforms 	13. Identify property <ul style="list-style-type: none"> • Property marking • Vehicle licensing and parts marking • Cattle branding 	18. Reduce emotional arousal <ul style="list-style-type: none"> • Controls on violent pornography • Enforce good behaviour on soccer field • Prohibit racial slurs 	23. Alert conscience <ul style="list-style-type: none"> • Roadside speed display boards • Signatures for customs declarations • “Shoplifting is stealing”
4. Deflect offenders <ul style="list-style-type: none"> • Street closures • Separate bathrooms for women • Disperse pubs 	9. Utilise place managers <ul style="list-style-type: none"> • Restrict spray CCTV for double-deck buses • Two clerks for convenience stores • Reward vigilance 	14. Disrupt markets <ul style="list-style-type: none"> • Monitor pawn shops • Controls on classified ads • License street vendors 	19. Neutralise peer pressure <ul style="list-style-type: none"> • “Idiots drink and drive” • “It’s OK to say No” • Disperse troublemakers at school 	24. Assist compliance <ul style="list-style-type: none"> • Easy library checkout • Public lavatories • Litter bins
5. Control tools <ul style="list-style-type: none"> • “Smart” guns • Disabling stolen cell phones • Restrict spray 	10. Strengthen formal surveillance <ul style="list-style-type: none"> • Red light cameras • Burglar alarms • Security guards 	15. Deny benefits <ul style="list-style-type: none"> • Ink merchandise tags • Graffiti cleaning • Speed humps 	20. Discourage imitation <ul style="list-style-type: none"> • Rapid repair of vandalism • V-chips in TVs • Censor details of modus operandi 	25. Control drugs and alcohol <ul style="list-style-type: none"> • Breathalyzers in pubs • Server intervention • Alcohol-free events

These twenty-five SCP techniques facilitate the development of crime prevention measures that increase the perceived difficulty (effort), increase perceived risks, and reduce anticipated rewards, and remove provocations and excuses associated with particular crimes. These measures are designed to reduce or prevent highly specific forms of crime, and aim to transform the immediate environment in a systematic, and ideally permanent way as perceived by a wide range of offenders (Clarke, 1983). Accordingly, in this study these categories are applied to examine mechanisms for the prevention of handset theft and crime associated with mobile phones. They subsequently provide the framework for the analysis presented in Chapter Seven.

The first, and most basic, category of situational measures seeks to *increase the real or perceived effort* associated with committing a particular crime. For example, Clarke (2007) described a measure introduced to remove the theft of cash donations from a church in Spain, addressed through the introduction of a debit and credit card reader machine that allows worshippers to make their donations electronically, removing the cash target from the Church premises. This proved to be an effective strategy to reduce the theft of donations. The second category of techniques includes measures that aim to *increase the real or perceived risks* associated with committing particular crimes, for example by increasing the chance of apprehension and punishment. Techniques in the third category aim to reduce the reward associated with the commission of crime, and is likely to be particularly relevant for reducing handset theft. The fourth category of techniques is concerned with *reducing provocations* that may encourage offenders to commit particular crimes in particular locations. Wortley (2001) has argued that the relevance of situational variables is not limited to their role in creating conditions conducive to the commission of crime. In some circumstances, he argues situational conditions may also *induce* or *prompt* illegal or anti-social behaviour to occur. Wortley (2001) terms these *precipitating factors*, and includes in this classification situations that prompt, permit or provoke illegal or anti-social behaviour and situations which exert social pressure on potential offenders, inducing criminal behaviour. Thus altering the perceived costs and benefits of the commission of crime may be insufficient; it is also necessary to acknowledge the role of situations in inducing criminal behaviour, and to address these. The role of precipitators is likely to inform

offender motivation and the structuring of offender decision-making, increasing incentives for particular types of offending. However, as Cornish and Clarke (2003) note, this informs the 'motivated offender' component of the crime triangle, but the crime opportunity is still required for an offence to be committed. The argument proposed by Wortley (2001) nevertheless informed the development of new crime prevention techniques, and provides a useful framework for understand the context of ethno-political violence in Kenya which characterises the first case study addressed in this thesis. During the election period in Kenya, it may be postulated that the context of widespread leveraging of ethnic identities to garner political support, coupled with the implications for the allocation of resources and opportunities associated with the outcome of the election, provide precipitating factors which prompt and provoke hate-speech and outbreaks of violence.

3.3.3 SCP techniques to reduce offending in digital spaces

SCP techniques may be applied to increase the effort and risk, and reduce the reward, provocation and excuses associated with the commission of crime in digital spaces. However, SCP techniques are developed to address specific crime threats in particular contexts, and existing techniques may or may not be relevant to address the ways in which mobile phones are used to facilitate crime in developing world settings. Nevertheless, crime prevention techniques which correspond with the effort, risk, reward, provocation, and excuses categories are provided here to situate the analyses presented in Chapter Seven of the crime threats identified in this study.

Examining existing techniques for the prevention of crime associated with networked technologies (primarily computers, but also applicable to mobile phones), measures seeking to increase the effort associated with accessing digital data have focused on 'target hardening'. These include technical measures such as firewalls and phishing filters, and removing loopholes in security which provide access to digital data to reduce e-commerce crime (Newman & Clarke, 2003). Measure which 'control access' and 'authenticate' the identity of users have also been proposed, such as the use of passwords and PINs, and encouraging users not to open suspicious content (ibid) in a bid to reduce crimes associated with deception.

Measures aiming to increase the risks of crime include initiatives aiming to 'extend guardianship', such as the Neighbourhood Watch scheme (Clarke, 1997) in physical spaces. On the Internet, online moderators monitoring the content of submissions to particular forums or websites may be regarded as 'guardians' of these digital spaces, ensuring the publication of appropriate content and preventing anti-social behaviour. In mobile phone networks, guardianship may be more diffuse, although MNOs and national security services are broadly responsible for crime prevention and may fulfil the function of guardians. Other SCP techniques to reduce the risk of crime aim to 'assist natural surveillance' by enlisting the help of the public (Clarke, 1997). Such techniques capitalise on the presence of other community members who are aware of, and recognise, suspicious behaviour in a particular location and function as impromptu guardians. Initiatives designed to capitalise on natural surveillance include, for example, enhanced street lighting to increase the visibility of offenders, which has been found effective in reducing crime (ibid). The previous chapter outlines some of the challenges associated with guardianship of mobile phone networks, and the ways in which mobile phone communications may transform traditional behavioural norms and bypass formal authorities and forms of regulation in developing world settings (see for example Section 2.2.3). These conditions may present challenges for the application of SCP techniques associated with guardianship, and are addressed in relation to the study findings in Chapter Seven.

Mobile phones enable users to conceal their identities, and even adopt false identities, to increase anonymity in their interactions with other users. Techniques aiming to 'reducing anonymity' are therefore likely to be relevant, and have previously been demonstrated to reduce offending in virtual environments in the developed world. Clarke (1990) demonstrates that the introduction of caller-ID in New Jersey reduced the rates of obscene phone calls by reducing anonymity and increasing the risks associated with this crime. Similar functions may reduce crime threats associated with deception facilitated by mobile phones in developing world settings, and may also increase opportunities to detect and punish offenders if aligned with formal crime prevention mechanisms.

Techniques implemented to reduce the reward associated with the commission of crime are also relevant for this analysis. These may include 'target removal' of valuable crime targets, such as encouraging users not to store valuable data (PIN codes and passwords, important documents, etc.) in mobile phone handsets. Encouraging users to resist offers which seem to be 'too good to be true' may also be classified as a technique aiming to 'reduce temptation' for potential offenders, previously identified in relation to e-commerce crime (Newman & Clarke, 2003). Other measures may 'deny benefits', for example through encrypting or otherwise protecting valuable stored data (ibid).

SCP techniques aiming to reduce provocations are founded on the assumption that certain feelings stimulate criminal acts, and that these feelings are stimulated by particular conditions. The particular, and peculiar, conditions associated with mobile communication enable mobile users to transmit anti-social content, or perpetrate scams, with low risk of detection. Receipt of such messages may *provoke* users to send further anti-social messages. Anger and emotional arousal can be expressed anonymously, for example through threats or false information. Provocations may contribute to the misuse of mobile phone communications, including criminal uses, and may in turn provoke the commission of further crimes. Traditionally, techniques that 'reduce frustrations and stress' aim to address outbursts of anger which lead people to commit crimes. Violent crime can be minimised by reducing the potential for conflict associated with particular conditions, such as segregating rival football fans or introducing standard taxi fares to avoid overcharging on common routes (Clarke, 1997). The presence of particular objects can also encourage criminal offences. This 'weapons effect' (Berowitz & LePage, 1967) emphasises the way in which the mere presence of a gun can incite aggression in some people. The link between individuals witnessing and committing crimes is also well established. For example, the presence of vandalism can encourage further anti-social behaviour within the environment (Kelling & Coles, 1998). Kelling and Coles identified a causal link between disorder, fear and serious crime, arguing that anti-social behaviour creates criminogenic conditions that threaten social order and encourage impunity, reflected in the title *Fixing Broken Windows*. This argument undermines previously widely held assumptions that dealing with disorder is inconsequential and that the purpose of law

enforcement is to address serious crimes. Kelling and Coles suggest that foot patrols reduced the fear of crime in urban American neighbourhoods by providing a highly visible signal of the maintenance of order. Within mobile phone networks, signs of disorder are dispersed and individualised. It is challenging to envisage technical prevention techniques which may function to reduce provocations. Accordingly, techniques aiming to reduce provocations may need to focus on wider sensitisation campaigns to promote the maintenance of social order.

The final category of situational techniques, *remove excuses*, addresses the guilt and shame associated with criminal behaviour, aiming to remove the excuses made by offenders to 'neutralise' their actions (Clarke & Homel, 1997). Tilley suggests that this category of techniques relate, "...to the perceived moral status of the act at the point of its commission" (2010, p113), and provides the example of illuminated speed limit signs encouraging drivers to reduce their speed and obey these limits. Rules provide a framework for the conduct of behaviour. When rules are unclear or ambiguous, individuals are more likely to commit crimes. As previously described, mobile telephony has experienced rapid growth in developing world settings. It is therefore unsurprising that laws, rules, and behavioural codes informing the use of this emerging technology are not yet fully developed. Furthermore, governing this environment is problematic when we consider that mobile networks facilitate personal, private communications; they are not a visible, accessible *public* space amenable to traditional forms of governance.

'Rule setting' and 'posting instructions' are SCP techniques designed to unambiguously delineate the boundaries of acceptable behaviour within discrete settings in order to reduce crime (Clarke & Homel, 1997). 'Alerting the conscience' of potential offenders at the point of committing the offence is another example of this category of SCP techniques, such as providing clear signage alerting drivers when they are exceeding speed limits, or by providing litter bins to 'assist compliance' with anti-littering laws. Originally termed 'controlling disinhibitors' (Clarke, 1997), this category of techniques also seeks to control substances that undermine social and moral inhibitions or impair judgement, and initially included propaganda (dehumanising target groups) and television violence (normalising violence). Establishing clear legal frameworks

governing the behaviour of mobile phone users corresponds with the remove excuses category of SCP techniques.

Examining crime in mobile phone networks in developing world settings, some SCP techniques may be effectively applied to reduce offending in these digital environments. However, it is necessary to first identify the specific crime threats associated with mobile phones, and the conditions and contexts informing opportunities for these crimes in developing world settings, in order to fully investigate the applicability of relevant situational prevention techniques. These are thoroughly addressed in Chapter Seven.

3.3.4 SCP techniques to reduce handset theft

Handset theft is a specific crime threat which occurs in both the developed and developing world. A range of techniques have been developed to prevent or reduce handset theft in Western settings. Addressing techniques applicable to acquisitive crimes, concealing, removing and replacing frequently targeted items with more unwieldy or non-transferrable objects may reduce theft, while marking property can reduce its resale value. Denying the benefits of crime to offenders is also an effective technique for crime reduction. For example ink tags may be used to prevent shoplifters from benefitting from stolen goods, which become less valuable once indelibly marked (DiLonardo & Clarke, 1996). For addressing theft of mobile handsets, several techniques are also available which increase effort and risk while reducing anticipated rewards. For example, Mailley (2011) describes the common practice of 'blacklisting', the disabling of stolen mobile phones, as an industry-level response designed to reduce the rewards and increase the effort of with handset theft. Remote locking and the remote recovery of airtime from stolen handsets denies thieves the use of SIM cards and phone credit respectively, while handset security features such as PIN numbers and other digital locks provide barriers to accessing handsets (Farrell, 2015). PIN numbers restricting access to handsets can be circumvented by formatting handsets. Thus such measures may prevent access to data temporarily stored in handsets, but once formatted the mobile handsets can be used again. Remote locking and deactivation features are also available on later generation mobile phones, but not on basic handsets. However, as the penetration and availability of handsets increases, costs associated with later generation handsets are likely to fall and their availability increase (GSMA,

2013), potentially increasing the availability of embedded crime prevention mechanisms such as remote locking.

Property marking, when permanent and conspicuous, may reduce the resale value of mobile handsets thus reducing the rewards associated with their theft. All GSM mobile handsets are inscribed with a unique 15 digit IMEI number behind the battery. If this is obscured, it can also be accessed by dialling *#06# from most phones. Websites are available online which can be used to identify registered stolen handsets by their IMEI numbers (Farrell, 2015). Police also use IMEI numbers to blacklist stolen mobile phones (Mailley et al., 2006). However, IMEI numbers must first be recorded, reported and registered as stolen on online databases. In contexts where Internet access is limited, this mechanism is likely to be of reduced value. Second-hand goods markets are widespread in East Africa, and in contexts where the price of purchasing a new handset remains unaffordable for many users, second hand models are likely to remain popular. Regulating markets is likely to be extremely challenging in developing world contexts, although it has proven an effective technique for reducing the rewards associated with offences targeting stolen goods elsewhere (Sutton & Simmonds, 2004). Addressing handset theft by strategies that both increase the risks, and decrease the rewards, associated with the resale of stolen handsets may be effective. Sutton and Simmonds (2004) suggest several ways this may be approached, which are adapted here for application to mobile handsets. Raising awareness among the general public about the relationship between buying stolen goods and crimes such as burglary and robbery may encourage them to resist purchasing stolen handsets and potentially report information to security agencies. Encouraging licensed traders to check the IMEI numbers of second hand handsets online prior to purchasing them may also be an effective means to disrupt the markets for these stolen goods, in combination with campaigns encouraging users to register their mobile handsets.

Kaplankiran et al. (2008) estimate (extrapolating from survey data) that around 5% of handsets may have been reprogrammed in the UK. Handsets are reprogrammed to alter the unique identity number of the handset, masking its origin and facilitating illegal resale. The authors note that the industry is dynamic, with demand stimulated by the continual integration of new

technologies into mobile handsets. In the context of this hybridization (e.g. the incorporation of cameras, MP3s, SatNavs etc.), “the reprogramming of stolen mobile phones is a key facilitator of mobile phone theft” (Kaplankiran et al, 2008, p. 727). Kaplankiran et al. (2008) suggest several prevention mechanisms, including etching or marking valuable components to prevent stolen handsets being used for parts. In a more comprehensive analysis of handset theft, Whitehead et al. (2008) review and propose a range of mobile phone anti-theft designs including visual deterrents, owner-identification and handset tracking. They propose characteristics that promote anti-theft designs using the acronym *IN SAFE HANDS*: identifiable, neutral, seen, attached, findable, executable, hidden, automatic, necessary, detectable, and secure. These include physical aspects of handset design which influence the way they are carried and used, and those which convey visual cues to potential offenders. They also include electronic components and built-in anti-theft technology (e.g. biometric scanning devices), add-on measures which securely store handsets (e.g. safe pockets), and systems that manage mobile phone networks (e.g. the policy and practices of MNOs). Drawing on early work examining characteristics which *promote* the theft of items, specifically VIVA (Cohen & Felson, 1979) and CRAVED (Clarke, 1999), Whitehead et al. (2008) address characteristics which *reduce* the theft of products. These are particularly relevant for the analysis of handset theft in developing world settings, and are applied to this in Chapter Seven.

3.3.5 Crime displacement and offender adaptation

The most prevalent critique levelled at opportunity and SCP methods is that of the displacement of crime. Displacement is defined as, “the relocation of a crime from one place, time, target, offense, tactic or offender to another as a result of some crime-prevention initiative” (Guerette & Bowers, 2009, p. 1333). This definition draws on the typology used by Felson and Clarke (1998) that described several types of displacement;

1. Geographical displacement in which crime is moved from one location to another
2. Temporal displacement in which crime occurs at a different time
3. Tactical displacement in which one method of committing crime is substituted for another method

4. Crime type displacement in which reductions in one type of crime catalyse increases in another

SCP focuses on the near causes of crime and the immediate situation that leads a particular offender to commit a particular offence, leading critics to argue that the offender is likely to simply change the target or type of crime. Using the example of vehicle crime, vehicles that are less protected are more likely to be targeted than more highly protected ones. 'Target' displacement is widely recognised in studies examining the effects of crime prevention (Guerette & Bowers, 1999). Several reviews of the empirical literature have investigated displacement, concluding that although crime displacement is possible, in the calculation of overall outcomes, accounting for both displacement and diffusion effects, the crime reduction effects of SCP measures outweigh the displacement effects (Barr & Pease, 1990; Cornish & Clarke, 1986; Eck, 1994; Guerette & Bowers 2009). In a systematic review of 102 evaluations of situationally-focused crime prevention initiatives, Guerette and Bowers (2009) find that crime displacement is less common than is widely assumed. Rather, *diffusion of benefits* is more common, wherein the preventative measures implemented in places often have unintended positive outcomes through protecting nearby places from crime.

An alternative explanation to account for changes in patterns of crime resulting from the implementation of SCP initiatives is *adaptation* to the changing opportunity structures. Ekblom describes adaptation as,

...part of a wider, evolutionary, process in which offenders adapt their methods of attack to circumvent current preventative measures, and preventers in their turn readjust by creating new devices or employing new methods of defence. The offenders in their turn make further countermoves and the process spirals on indefinitely (1999, p. 28)

Ekblom (1999) characterises this process as an 'arms race' in which crime prevention initiatives must constantly adjust and adapt to keep pace with the adaptive methods of offenders seeking to evade detection, developing analogies between the biological co-evolution of predator-prey relationships and the adaptive behaviour of criminals in the face of changing crime opportunities.

Noting that the rate of technological change is accelerating, Ekblom calls for foresight and preventative adaptation to protect against forthcoming crime threats. In developing world settings, different constellations of access and use of mobile phone technology are likely to contribute to different opportunities for crime and different adaptive behaviours. In recognition of these differences and on the potential of mobile phones to enable users to adapt their behaviour to commit crimes in digital networked terrains, it is therefore essential to investigate existing and potential crime threats, and identify suitable techniques for their prevention.

3.3.6 Responsibility for preventing crime associated with mobile phones

In physical spaces, responsibility for the prevention of crime is more clearly defined than in virtual networks. Within mobile phone networks, this new virtual environment is not characterised by traditional patterns of guardianship that constrain or prevent crime and anti-social behaviour. Roman and Farrell (2002), Farrell and Roman (2006) and Newman (2011) have argued that crime at places can be effectively analysed through the analogy of pollution, examining the cost of crime as a negative externality created by poorly regulated crime places. In this analysis, crime is an unintended negative side effect of developmental processes that promise overall benefits. Eck and Eck argue that, “places can emit crime just as a coal fired power plant can emit sulphur dioxide (2012, p283), proposing that place managers can decrease crime by changing place management practices, just as regulation externalising the costs of pollution can function to decrease pollution. They further argue that regulatory approaches and policies are needed to address crime in particular high-crime places, and propose “a portfolio of regulatory policies designed to encourage owners of crime places to prevent crime” (2012, p283), suggesting that problem-oriented policing approaches increasingly promote shifting the responsibility from crime prevention in places back to the organisations responsible for those spaces (Scott, 2005).

Examining mobile phone networks through the analogy of pollution, Roman and Farrell (2002) propose that mobile phone theft can be analysed as a form of pollution, suggesting that poor design by the mobile phone industry externalises of the costs associated with mobile phone handset theft. Grabosky and Smith (2009) also argue that weak regulation of the mobile phone sector contributes to

crime opportunities, while Farrell (2015) notes that problems associated with the detection and prevention of these crimes are compounded by the globalised nature of digital communications that may span multiple regulatory terrains. Mailley (2011) proposes that the mobile phone industry has resisted calls from the UK government to increase the security of handsets to design-out crime, effectively prioritising increased profits and externalising the costs associated with mobile phone crime onto individual users and governments.

In developing world settings, responsibility for the detection and prevention of crime threats associated with the increasing penetration of mobile phones is diffuse, and has been examined in Section 2.4 of the previous chapter. It is important to investigate the existing and potential crime prevention mechanisms in these settings, and examine questions of responsibility for the prevention of mobile phone-related crime.

3.4 Conclusion

Chapter Three has addressed the theoretical frameworks through which mobile phone crime is investigated in this thesis. Opportunity theories of crime are presented and applied to the new conditions associated with mobile telephony in developing world settings. Mobile phones are variously examined as attractive crime targets and effective crime facilitators. Routine activity theory provides a theoretical foundation for the investigation of the crime and security implications of these tools, examining the ways in which the new patterns of daily life associated with these socio-technical changes, which create new opportunities for crime in contexts characterised by weak personal and communal security.

This chapter also described crime prevention mechanisms associated with opportunity theories of crime, specifically drawing on techniques of SCP which aim to increase the effort and risk, and reduce the reward, provocation and excuses associated with mobile phone crime. SCP techniques are applied to handset theft and networked crime facilitated by mobile phones. Critiques of SCP are also addressed, including displacement and offender adaptation.

Chapter Four: Method

4.1 Introduction

The preceding chapters review the existing literature and theoretical frameworks, and identify knowledge gaps around crime and security threats, vulnerabilities and opportunities associated with mobile telephony in the developing world, grounding the aims of this research. This chapter describes the methodological approach employed to investigate mobile phone crime in the selected developing world settings, explains the research design, and describes the methods used for collection and analysis of primary qualitative and quantitative data. It also examines the selection of two case studies and the thematic focus on crisis-affected populations in East Africa. This chapter describes the sample, procedures and research instruments used for the in-depth interviews, FGDs and questionnaire surveys, discusses methodological challenges, and outlines the research ethics.

4.2 Aims of the Study

In this thesis, the relationship between mobile telephony and crime and security in the developing world is investigated through the lens of crime-as-opportunity. The thesis addresses the research question,

What are the implications of the increasing penetration of mobile phones in developing world settings for opportunities for crime and its prevention?

Specifically, the thesis is structured around the following aims:

1. Identify the ways in which mobile phones inhibit crime in developing world settings, drawing on opportunity theories of crime;
2. Identify the ways in which mobile phones create opportunities for crime in developing world settings;
3. Identify social, cultural and situational conditions informing access to opportunities for crime and crime prevention associated with mobile phones in developing world settings;
4. Identify, analyse and categorise mobile-phone related crime and security threats across the two case studies;

5. Examine the application of situational crime prevention techniques to the prevention of crime associated with mobile phones in developing world settings, specifically as *crime targets* and *crime facilitators*;
6. Gain methodological insights into the application of opportunity theories of crime and situational crime prevention to mobile phone enabled crime in developing world settings.

This chapter sets out the methods through which these aims are investigated.

4.3 Researching mobile phone crime in the developing world

The rapidly emerging, multi-disciplinary studies presented in Chapter Two are primarily concerned with social, economic, and political impacts of mobile telephony, and are complicated by the speed and breadth of its' penetration. Focusing on the socio-economic outcomes of particular ICTD initiatives, or examining how information sharing facilitated through mobile networks contributes to constellations of social and economic wellbeing for particular groups, these studies are informed by the approaches and analytical styles of the academic departments from which they originate; including anthropology, development studies, geography, information systems, and political science.

The existing body of literature on the impacts of mobile telephony in the developing world draws on data collected through a diverse range of methods, ranging from in-depth ethnographic studies of specific communities to macro-level, multi-country analyses of broad trends and patterns. Some fields, such as ICTD, are characterised by high volumes of evaluations, reports and case studies published by international organisations and response agencies while others, such as analyses of mobile financial services, are dominated by industry-funded statistical analyses of operator data which may ignore the broader impacts of mobile telephony at the community level (Duncombe & Boateng, 2009; Duncombe, 2012b). Research commissioned by international development and humanitarian organisations has also contributed to the emerging body of knowledge around mobile telephony in the developing world, but has largely focused on positive development outcomes, overlooking unintended consequences for crime and security associated with the use of these tools. These particular theoretical and practical orientations have largely

obscured the associated and interconnected crime and security impacts affecting mobile users in the developing world.

The limited body of academic research on mobile phone related crime in developed world settings may be informed by this poor availability of data. It may be postulated, however, that in resource-poor, developing world settings, the increasing availability of mobile handsets and network accessibility introduces both new crime targets and new opportunities for crime and crime prevention. This study aims to overcome the challenges associated with accessing crime data in the developing world through the collection and analysis of primary data on the perceptions and experiences of mobile phone users and their communities.

4.4 Research design

SCP approaches typically use an action-research approach (Clarke 1997), following Ekblom's (1988) 'preventative process' this method aims to 1) gather data on the crime problem of interest, 2) analyse and interpret the data, 3) formulate preventive strategies based on the data analysis, 4) implement prevention strategies, and 5) monitor the impact on the outcomes of interest. In SCP, the data analysis guides the subsequent development of preventative methods. Sidebottom (2013) uses Ekblom's (1988) preventative process to examine the transferability of the action-research approach to a specific developing world context, Malawi, identifying limitations in the broader application of SCP techniques in resource-poor settings. Sidebottom (2013) concludes that challenges associated with data collection in resource-limited settings inform the feasibility of the application of SCP techniques beyond the industrialised settings in which it has hitherto been applied. In particular, he notes that gathering reliable data on crime and security issues in the developing world is impeded by the poor crime data, high rates of underreporting, and access restrictions (ibid). Accordingly, an interactive, mixed methods research design was employed to facilitate the data collection and analysis presented in this thesis, drawing on both qualitative and quantitative data. Despite the breadth of qualitative and quantitative studies of the economic, social and cultural impacts of mobile telephony in the developing world documented in the previous chapters, specific interpretive analyses of the relationship between *mobile telephony and security* are essential to inform theory-building on this

topic. Although widespread anecdotal evidence of ambiguities surrounding the use and impacts of mobile telephony emerges throughout this literature, limited systematic analyses are available on user perceptions of crime and security threats associated with mobile telephony in the developing world, or on the social and situational conditions affecting vulnerability to these threats. This dearth of background information on mobile phone-related crime and insecurity precludes the systematic development, operationalization, and analysis of variables necessary for purely quantitative analysis of this topic. Mixed methods research entails the collection, analysis, and integration of both quantitative and qualitative data, facilitating a more thorough analytical and exploratory engagement with the research domain than either method alone (Brewer & Hunter, 2006; Creswell, 2009; Creswell & Plano Clark, 2011; Johnson, et al., 2007; Teddlie & Tashakkori, 2009), and is well suited to this research.

Qualitative research was conducted to explore users' perceptions and experiences (Creswell, 2009) of mobile telephony for crime and security, recognising the centrality of users' interpretations for this analysis. The qualitative approach also facilitated the development of study questions and procedures, building from the themes identified as important to participants (ibid). During this study a number of crime and security threats emerged which had not previously been identified in existing studies. The qualitative methods used were flexible enough to enable study participants to introduce these new themes, and facilitated engagement with unexpected findings.

In the conclusion to a recent special edition of the *Journal of Peace Research on Communication, Technology and Political Conflict*, Dafoe and Lyall (2015) note that the reliance on large-scale analyses of quantitative secondary data to examine the relationship between mobile phones and conflict events may obscure mechanisms and dynamics informing this relationship which qualitative methods could reveal. These authors reflect that interpretive data are valuable for the elaboration of theory and for informing the development of statistical models. Wasserman (2011) also critiques the prevalence of speculative assumptions underpinning quantitative, macro-level studies on the impacts of mobile telephony on insecurity in Africa, highlighting the need for qualitative data to inform analyses of the relationship between access figures and particular development and democratisation outcomes. While official census-

level data on mobile phone ownership are available in East Africa, these official statistics are complicated by the sharing practices described in the previous chapter. As Chapter Two demonstrates, commercial estimates of mobile penetration may also obscure culturally specific patterns of mobile use. These include secondary users who access mobile telephony through shared handsets, patterns of multiple-SIM ownership and use and differences in use habits between and within social and demographic groups (Aker & Mbiti, 2010; Burrell, 2010; James, 2011; 2014; James & Vestee, 2007; Tenhunen, 2008). Furthermore, as Gill notes in developing world contexts,

Official statistics are often most unsatisfactory. They are characterised by unreliability, gaps, over-aggregation, inaccuracies, mutual inconsistencies and lack of timely reporting. (1993, p. 3)

Furthermore, official figures describe only mobile phone penetration and do not collect data on experiences of crime and security associated with these tools. To the best of the author's knowledge, no data are available on the crime and security impacts of mobile phone use in developing world settings. Agencies disseminating anti-violence messages through mobile networks have not published data on their recipients or scale of operations beyond anecdotal commentary, and industry-level data for individual users are unavailable.

In order to address these weaknesses, primary quantitative data were collected to facilitate statistical analysis of patterns and correlates of crime in developing world settings. However, quantitative research is reliant on the accurate and systematic identification, operationalization and measurement of the variables of interest (Creswell, 2009). In this study, it was not possible to fully operationalize the variables of interest in advance due to the limited availability of existing studies addressing this topic. Therefore, a mixed methods approach provides the opportunity to draw out and interrogate the relevant conditions and contexts that influence both crime and crime prevention associated with mobile phones, and to iteratively investigate these variables throughout the period of data collection.

Critically for this study, mixed methods research is also recommended for research addressing dynamic, emerging processes, paradoxes, and

contradictions as they provide a means to explain findings generated by one method with the other (Bryman, 2006; Greene, et al., 1989). It is anticipated that user experiences of the crime and security impacts of mobile phones are likely to be complex and dynamic, as mobile penetration increases and new users adopt these technologies. These conditions necessitate a flexible and iterative research design. Mixed methods therefore facilitate a deeper engagement with the aims of the research, as quantitative tools enable the collection of numerical data illuminating trends and patterns, while qualitative methods provide study participants with opportunities to elaborate and explain their experiences and perceptions of mobile tools, and describe their value in relation to both personal and communal wellbeing. In this study, examining perceptions of threats vulnerabilities and mitigation mechanisms required a nuanced and iterative analysis of data from a range of sources; the perceptions of individual users, communities and agencies inform the analysis of the findings. The qualitative and quantitative data reveal contradictions in users' attitudes to mobile telephony and provide mechanisms through which to interactively analyse different data types and interrogate their contradictions. The perceived ambiguities associated with mobile telephony are a recurring theme emerging from the primary data, which is triangulated and interrogated through analysis of the qualitative and quantitative data collected.

Another benefit associated with mixed method research is the utility of using the findings derived from one method to develop research tools for use with the other (Greene, et al., 1989). In this study, this methodological interactivity is valuable. For example, the qualitative interviews provided a means to access local knowledge that subsequently informed the identification of suitable survey data collection locations. Information provided by interviewees also contributed to the development of suitable survey question formats, appropriate terminology, and FGD discussion topics, and illuminated sensitive topics with the potential to cause offense. The iterative design facilitates interaction between and within methods and phases, each method and phase influenced recursively by each other.

The philosophical framework adopted for the design of this research is pragmatism, which is described by Johnson, Onwuegbuzie and Turner as, "a well-developed and attractive philosophy for integrating perspectives and

approaches” (2007, p. 125). Pragmatism provides an epistemological justification and logic for mixing approaches and methods. Creswell and Plano Clark (2011) note that pragmatism, unlike other theoretical frameworks, focuses on the consequences of research. It uses both inductive and deductive analysis to accommodate multiple perspectives on reality and accepting that both objective and subjective knowledge are valuable for research. Johnson, Onwuegbuzie and Turner argue that pragmatism provides, “a philosophy that supports paradigm integration and helps mixed research to peacefully coexist with the philosophies of quantitative and qualitative research” (2007, p. 125). Thus pragmatism serves to bridge the gap between the empirical, scientific approach and subjective, qualitative methods of inquiry used in this study. Pragmatism is also well suited for this analysis of the application of opportunity theories to new types of crime in the mobile network. The methods most commonly associated with SCP are problem-oriented, action research approaches (Clarke, 1997), through which data are gathered and analysed, preventative strategies formulated, monitored and reviewed (Ekblom, 1988). The pragmatic approach encourages the application of research methodologies that ‘work’, for which mixed methods are eminently well suited. As Howe concedes, “in the end, a philosophical perspective is valuable just to the extent that it helps to shape practice” (2003, pp. 44-45).

Recognising the multiple influences affecting mobile phone ownership and use, and the ambiguous interpretations of these communications tools for personal and social wellbeing and harm, pragmatism provides a suitable theoretical framework for exploring and explaining these complexities through the use of a mixed method interactive design. The pragmatic approach was also adopted in responses to methodological challenges; access to the refugee populations researched in Uganda was facilitated through partnership with GSMA and the support of UN OCHA and UNHCR. Collaboration with these organisations provided a unique opportunity to collect primary data on mobile telephony and perceptions of security and to potentially influence policy decision-making to enhance the protection of vulnerable populations. As Jacobsen and Landau assert, "Studies on forced migrants should aim to meet the dual imperatives of scholarship and impact: both to satisfy the demand of the academy, and to ensure that the knowledge from studies is used to improve refugees' welfare

and protection” (2003, p. 11). Collaboration with agencies offered an opportunity to disseminate the study findings more broadly, and to inform the theory and practice of ICTD through enhancing the knowledge base on crime and security threats and vulnerabilities affecting vulnerable populations.

4.5 Selected methods

Three research methods were employed for the collection of the primary data informing this study: in-depth interviews, FGDs, and surveys. This section describes each of these methods, outlines sampling procedures and describes the data collection instruments (provided in Appendices 1-4).

4.5.1 In-depth interviews

In-depth interviews were selected in order to collect qualitative data from key stakeholders responsible for responding to crime threats and using mobile phone networks to prevent outbreaks of violence. This method enabled the researcher to engage with these key informants through a flexible, discursive format (Kvale, 1996) and to examine their experiences and attitudes to mobile phones as crime-enhancing or crime-reducing tools. Guion, Diehl and McDonald note that in-depth interviews, “are most appropriate for situations in which you want to ask open-ended questions that elicit depth of information from relatively few people” (2011, p. 1), and interviews were useful in this study for several purposes. Some interviews were conducted to facilitate the methodological design of the study. These occurred prior to the FGDs and survey administration, in order to collect feedback on the planned data collection instruments and survey implementation methods. This included soliciting advice on the local context, culture, research etiquette, and attitudes to surveys amongst the general public. The data informs the subsequent analysis of the guardianship of mobile phone networks, responsibility for the prevention of mobile phone crime and mechanisms designed to enhance the reporting and prevention of other types of crime utilising mobile phone networks.

The sampling method chosen for the in-depth interviews was purposive. The initial identification of interview participants was based on a thorough review and analysis of the available literature and institutional publications in order to identify information-rich individuals, a technique termed ‘critical case sampling’ (Patton, 1990) in which researchers select, “...those (individuals) that can make

a point quite dramatically or are, for some reason, particularly important in the scheme of things” (Patton, 1990, p. 174). Each informant was then asked for recommendations of other individuals who might be able to provide valuable information. Patton describes this snowball sampling as, “an approach for locating information-rich key informants or critical cases” (1990, p. 176).

Each potential interviewee was first contacted by telephone or email, informed of the research aims and affiliations, and asked if they were willing to meet to discuss their views and experiences on the use of mobile telephony for enhancing or reducing the perceived security of users. Interviews were then arranged and conducted with willing participants, face-to-face in their workplaces. In Kenya, the interviews were semi-structured using an interview guide provided in tables 2 and 3. The semi-structured interview method was used in order to, “help the interviewer focus on topics that are important to explore, maintain consistency across interviews with different respondents, and stay on track during the interview process” (Guion, et al., 2011, p. 2). In Uganda, the interviews were unstructured in order to facilitate a flexible approach to the collection of data from a diverse range of study participants, conducted under challenging logistical conditions within Kyangwali Refugee settlement.

De-briefing interviews were also conducted with each of the research assistants involved in the administration of questionnaires (transcripts are included in Appendix 5). These data are used in part to critically engage with the reliability and content of the survey data collected, and in part to facilitate critical reflection on the methodological approach, instruments, and sample (Araali, 2011).

Key characteristics of the in-depth interviews were open-ended questions (often beginning *why* or *how*) which encouraged respondents to expound on a particular topic, a semi-structured format which allowed a conversational flow to develop, and the use of active listening skills to interpret and seek clarity (Guion, et al., 2011). Particular questions, termed *probes*, were asked to encourage respondents to add detail, elaborate on or clarify their responses (Patton, 1990) when necessary. For example, participants were asked to explain their meaning if responses were unclear, to provide more information

about a particular topic of interest, or to add more detail about particularly relevant comments and responses.

Concerning the structure of the interviews, following Guion, Diehl and McDonald (2011) initial introductions included a clear explanation of the study purpose. This aimed to put the participant at ease, and furthermore Walsham (2006) notes that understanding the researcher's agenda increases openness and willingness to participate. Based on interpretive research conducted in sixteen countries, Walsham suggests that interview participants are generally willing to discuss their personal and professional experiences with,

...reasonable openness and honesty, provided that they perceive the researcher's sincerity of interest, feel that they understand the researcher's agenda, and trust the researcher's statements on confidentiality. (Walsham, 2006, p. 323)

Accordingly, clarifying the purpose and boundaries of the research prior to conducting interviews was critical, and respondents were given the opportunity to ask questions and engage with the topic of the research at the beginning of each interview. The discussion topics and prompts developed in the interview guide were introduced in a flexible manner according to the flow of each discussion, with the sequence largely guided by interviewees' responses.

The question of whether or not to record interviews is also a relevant consideration for this study. Guion, Diehl and McDonald (2011) suggest obtaining permission for audio recording, recommended in combination with written field notes containing observations of both verbal and non-verbal behaviour as well as personal reflections about the interview. However, there are benefits and costs associated with recording interviews. Recording ensures the collection of a true record of the interview, frees the researcher to concentrate fully and enables the researcher to return to the transcript later and select direct quotes (Walsham, 2006). However, recording devices are likely to reduce trust and make respondents less open and honest, and only provide a partial record of the full spectrum of verbal and non-verbal cues (ibid). Nevertheless, where participants granted permission interviews were digitally recorded. These recordings were subsequently transcribed and supplemented by written field notes.

4.5.1.1 Interview Guide

Two interview guides were developed for use in Kenya: one for interviewing representatives of organisations using mobile tools for peace-building and violence prevention (see table 2) and one for local research assistants after the administration of questionnaires (table 3). As stated previously, interview guides were not used in Uganda.

Table 2: Interview discussion themes in Kenya

No.	Discussion Theme
1.	Background information about their organisational affiliation and objectives in using mobile phones to prevent, mitigate or de-escalate violence
2.	Reasons for using mobile phones for peace-building
3.	Users and scope of the mechanism
4.	Reflections on the impact and effectiveness of the mechanism
6.	Community responses and informal communication of message content
7.	Core concerns and priorities of organisation

Table 3: Interview discussion themes with local research assistants in Kenya

No.	Discussion Theme
1.	Background information about the locations of data collection
2.	Overall impressions relating to administering the questionnaires
3.	Impression of participants' responses to the questionnaires
4.	Surprising or unexpected experiences
5.	Effect of administering the questionnaires on personal attitudes
6.	Most memorable experience
7.	Challenges

4.5.1.2 Limitations

In-depth, semi-structured interviews provide a method through which to access detailed information from a small sample of respondents. The interview participants were selected according to their relevance for the present study, and provide valuable data about the relationship between mobile phones, crime and crime prevention. However, they do not provide a representative sample of relevant organisations, nor do the individuals selected represent their organisations in any formal capacity. Furthermore, the participants' responses are likely to be informed by a number of factors, ranging from the timing and location of the interview, their personal opinions and attitudes, their organisational mandate, perceptions of the purpose of the interview and

expectations regarding the use of the data collected, and the demeanour and non-verbal signals of the interviewer. These limitations are addressed in part through the use of an interview protocol including clear and standardised introductions (Kvale, 1996). Primarily however, these are mitigated through maintaining awareness of, and sensitivity to, these potential biases. For example, conducting interviews in comfortable locations during a convenient time for the participant, explaining clearly how the data are analysed and used, and providing assurances regarding anonymity for any sensitive content provided.

Three recorded interview transcripts are included in Appendix 8, and the issue is discussed in depth in Chapter Seven. The remaining interviews were recorded by hand, supplemented by additional notes recorded immediately after each interview. Accordingly, the interview quotes provided in the *Results* chapter may not be precise verbatim reproductions of the interviewee's statements as they are based on these hand-recorded notes.

Despite these challenges, interviews nevertheless provide opportunities to collect in-depth information from key stakeholders, both to inform the study and to contribute to refinements to the other data collection instruments.

4.5.2 Focus Group Discussions

This study draws on data from focus group discussions (FGDs) conducted with mobile phone owners, users and non-users to investigate experiences of mobile phone crime and crime prevention. FGDs comprise a form of group interview in which both the content of the discussions and the in-group interaction are valuable sources of data (Kitzinger, 1995; Redmond & Curtis, 2009). The aims of this research are well suited to this method as it enables the observation of interactive debates about ambiguous perceptions of both threats and benefits associated with mobile telephony.

Generating and collecting data within a group setting provides opportunities for the researcher to observe group dynamics, non-verbal communication, jokes, anecdotes and teasing. As Kitzinger notes, "gaining access to such variety of communication is useful because people's knowledge and attitudes are not entirely encapsulated in reasoned responses to direct questions" (1995, p. 299). In this study, the interpersonal dynamics of the FGDs provides additional

insights into participants' attitudes to topics such as the effectiveness of crime control mechanisms.

FGDs are generally regarded as unsuitable when seeking a consensus, or for the discussion of sensitive or personal information, when the environment is emotionally charged, or when there is conflict between group members (Krueger & Casey, 2000). Furthermore the lack of confidentiality associated with the group setting can be problematic in some circumstances, for example when information is sensitive (ibid). However, in this study the investigation of the topics of interest was founded on expectations of differences of opinion, and the group dynamics therefore presented a useful mechanism for comparing responses and attitudes among group members, and identifying topics of dissent. The content of the discussions does not include personal or sensitive information, but nevertheless required a degree of engagement that was more easily obtained through the format of a group discussion rather than an individual interview.

The topics addressed during the FGDs were not personal or sensitive, and the group format of this method was well suited to examining both individual and communal experiences associated with mobile telephony. Furthermore, a related benefit of the interactive style of FGDs is the potential for creating a 'cascade effect' of ideas and information recall, through which memories are triggered and opinions developed with reference to the experiences shared by others in the group (Lindlof & Taylor, 2010). This technique was particularly effective as participants were asked to recall past events, such as the previous election period. During these discussions, the contributions of some group members reminded other participants of their own experiences, prompting their contributions to the discussion. However, it is recognised that group discussion of past events may contribute to recall biases, as shared stories may affect participants' memories of personal experiences.

FGDs are regarded as particularly valuable for the collection of exploratory or background information on a topic where little is known or previously published (Barbour & Kitzinger, 1999; Stewart, et al., 2007). This research seeks to illuminate the understudied security implications of mobile penetration, a new area of investigation well suited to the exploratory nature of the FGD method.

Furthermore, as a result of the shared nature of mobile phone use discussed in Chapter Two (Aker & Mbiti, 2010; Burrell, 2010; James, 2011; 2014; James & Vesteeeg, 2007; Tenhunen, 2008), FGD discussions revealed interesting themes and dynamics between participants regarding communal practices of sharing. FGDs were also particularly appropriate for this research because they do not discriminate against illiterate participants, and also encourage participation from those who may be unwilling to be interviewed alone (Kitzinger, 1995). This was particularly valuable in Uganda where FGD participants comprised rural populations with low literacy rates. Ultimately, FGDs provided a data collection mechanism which was well suited to the conditions and topics of this study.

4.5.2.1 Sampling Method

In Kenya, FGD participants were recruited using a purposive sampling method, in which, "certain predetermined criteria and characteristics are identified for in-depth, qualitative analysis" (Patton, 1990, p. 177). Three conditions were specified: These participants were required, 1) to own or use a mobile telephone, 2) to have resided in Kenya during the 2007/8 post-election period, and 3) to be over the age of 18. In Uganda, due to logistical challenges foreseen in relation to conducting FGDs in refugee villages, only adults were invited to participate in the FGDs; no other constraints were imposed on participation.

Opinions are divided regarding the ideal of homogeneity or heterogeneity of FGD participants. Redmond and Curtis (2009) argue that commonalities between group members are beneficial, as homogeneity "permits free-flowing discussions among participants" (2009, p. 63), citing sex, age, race and social class as attributes commonly considered. Acknowledging that the goal is homogeneity in *background* and not homogeneity in *attitudes*, they argue that,

...in selecting group participants, it is necessary to ensure that every member of the group is able to contribute. Moreover, participants must feel comfortable talking to each other and a huge disparity in social background may prevent this.
(Redmond & Curtis, 2009, p. 63)

In contrast, Kitzinger (1995) argues that while most researchers aim to facilitate homogenous FGDs, diverse groups can facilitate the exploration of different

perspectives and provide more interesting data for analysis. Vaughn, Shay Shymm and Sinagub (1996) also suggest that heterogeneous groups may be appropriate in some contexts, such as when a diverse group may reveal different explanations for observed phenomena, acknowledging that dissimilar participants may stimulate interesting dynamics and differences of opinion. Recognising the benefits associated with both homogenous and heterogeneous FGDs, for the present study a heterogeneous group of between seven and ten men and women of various ethnicities were invited to participate in FGD discussions. As the topics under discussion were not deemed to be gender-sensitive, a heterogeneous sample was appropriate to facilitate the observation of relevant intergroup dynamics, enabling the experiences of both male and female respondents to be introduced and discussed within the mixed group. In order to facilitate the collection of a diversity of data, FGDs were composed of both community members and 'community leaders'. This composition provided interesting perspectives and further stimulated group discussions. Kitzinger cautions that, particularly among heterogeneous FGDs, "it is important to be aware of how hierarchy within the group may affect the data" (Kitzinger, 1995, p. 300). The impact of the intra-group power dynamics is examined in Chapter Seven.

Finally, opinions vary on the ideal size of a FGD (Redmond & Curtis, 2009; Kitzinger, 1995). For Kitzinger (1995), a FGD ideally consists of between 4 and 8 participants, although she describes examples ranging from 6-50, depending on the purpose of the discussion. Redmond and Curtis (2009) recommend inviting between 3 and 14 participants, cautioning that small groups are more easily dominated. Redmond and Curtis note that, "...whatever the decision regarding the size of the group, it is important to recruit more people than are required" (2009, p. 65), and suggest informing participants in advance of the possibility that they may be asked to leave if numbers exceed the planned target. It was anticipated that between seven and ten participants would be invited to participate in each of the FGDs, assuming that some invited participants would not attend. This is discussed in depth in Chapter Seven.

4.5.2.2 Procedures

Vaughn, Shay Shymm and Sinagub (1996) provide an outline for the implementation of FGDs. They suggest the prior development of a FGD guide

to serve as a map. In terms of order, they suggest first an introduction to the group and the research, some gentle warm up questions (e.g. regarding travelling to the site) and the clarification of key terms to be discussed. They then suggest beginning the session with easy, non-threatening questions before introducing more difficult ones, summarising the session, checking in with participants and finally providing a closing statement.

Two FGDs were conducted in Kenya in the regional capital Nakuru and in the town of Naivasha, both of which experienced high rates of violence during the 2007/8 election period (KNCHR, 2006). FGDs were conducted in a college hall in Naivasha and a hotel conference room in Nakuru. Information was collected on the age, sex, occupation and ethnicity of these FGD participants, and is provided in the *Kenya* chapter. In Uganda, three FGDs were conducted in villages within the Kyangwali refugee settlement. The locations were in the shade of a partially constructed building in Kisonga, under a large tree in Malembo and in a church in the long-established village of Kentome. In Kenya, participants were provided with refreshments during the FGD. However, in Uganda refreshments were not provided, a decision informed by the interviews conducted with staff at UNHCR and other service providers, and in line with accepted institutional practices. It was critical to align the research procedures with the accepted practices of organisations operating within Kyangwali settlement, as Walsham cautions, "Stories about researchers pass rapidly around an organization, and being a nuisance is not only a morally dubious practice, but is instrumentally foolish" (2006, p. 322). Acknowledging and respecting local practices was essential for this fieldwork.

The FGDs were hosted during weekday afternoons, lasting one to one and a half hours. In Kenya, each FGD followed a similar format. Chairs were arranged in a circle (Kitzinger, 1995). Group members were welcomed and introduced to the researcher, research aims and the scope of the project. Participants were then informed about their rights to decline to comment on the topics discussed and to withdraw at any time, and informed consent for participation was gained from each participant. Following these introductions, a structured format was followed (see table 4). FGD discussions and interactions were recorded in handwritten note form and later transcribed into digital format. FGDs were also intended to be digitally recorded, following initial testing of the recording

devices, but the locations and sizes of the groups precluded this, and the recordings were of insufficient quality to enable transcriptions. Accordingly, the quotes provided in the *Results* chapter are based on the handwritten FGD notes taken during each session.

In Uganda, the FGDs were intended to be gender-segregated, with separate groups for men and women to account for power imbalances and encourage open participation from all group members. Attempts to control the gender composition and group size were foiled by exigencies: The public locations of the FGD sessions rendered it impossible to restrict access or participation, examined in depth in 7.7.

4.5.2.3 FGD Tool

The FGD tool in Kenya included a summary of the introductions and aims of the research and eight core topics for discussion (see table 4). A full list of questions is included in Appendix 3.

Table 4: FGD Topics in Kenya

No.	Topic
1	Importance of mobile phones: Participants were asked about the uses of mobile phones, access and availability by different community members and particular situations when they may be most useful.
2	Communication habits and attitudes to appropriate uses of mobile phones: Communication methods were discussed, including the relative trustworthiness of different methods, and the use of mobile phones in particular for the communication of political information.
3	Hate-speech and coordination of violence using mobile phones during the 2007/8 Elections: Participants were asked to recall how mobile phones were used during this period, including hate-speech and rumour, and whether they were also used to contact police, security forces, etc.
4	Receipt of peace SMS or hate-speech during the 2013 election period: Participants were asked if they had received particular types of messages and from whom they originated.
6	Effectiveness of peace SMS campaigns and mobile-enabled violence prevention mechanisms: Participants were asked to discuss peace SMS and violence prevention campaigns using mobile phones
7	Potential of mobile telephony: The general impact of increasing access to mobile phones on peace, violence, crime and security was discussed.
8	Regulation and Monitoring: Attitudes to government regulation and monitoring and their impact on mobile phone use were sought.

In Uganda, the FGD instrument addressed eight topics, as shown in table 5. A full list of questions is included in Appendix 4.

Table 5: FGD Topics Uganda

No.	Topic
1	Communication methods: Respondents were asked to explain the methods they used for communicating with other refugees in the settlement, with service providers, and with distant families.
2	Priority Communications Needs: Participants were asked about who, when and what they most needed to communicate.
3	Ownership and Use: Group members were asked about access to mobile phones within the group and the wider community, and discussed the challenges associated with mobile ownership and use.
4	Challenges: Challenges and impediments to mobile ownership and use were discussed.
5	Benefits: Participants were asked about perceived benefits of mobile telephony compared to other forms of communication.
6	Trustworthiness: Participants were asked about the reliability of information received through mobile channels.
7	Safety and Security: The impact of mobiles on perceptions of security were discussed.
8	Privacy: Participants were asked about any potential privacy concerns around mobile calls and SMS content.

4.5.2.4 Limitations

Several disadvantages have been identified in relation to FGD discussions. These include the small sample sizes that preclude the collection of representative data from larger populations, while moderating and controlling group discussions is challenging and participants may digress into irrelevant topics (Kitzinger, 1995; Redmond & Curtis, 2009). Participants' responses may also be influenced by the responses of others in the group, and the use of heterogeneous participants exacerbates the potential biases associated with peer pressure and conformity to the norms of the group (Kitzinger, 1995). In particular, the inclusion of respected community leaders may bias participant responses if group members agree with their views even if they contrast with their own opinions. Further to this, participants may align their responses with answers they perceive to be desired by the moderators, informed by the

phrasing or sequencing of questions or non-verbal cues such as body language and gestures.

These risks were mitigated as far as possible by maintaining an awareness of, and a commitment to, adopting a neutral, unbiased tone and body language during group discussions, encouraging participants to speak freely, and remaining sensitive to the non-verbal cues and body language of group members. These strategies may illuminate group dynamics informing participant responses, enabling the facilitator to probe more deeply into particular topics. Finally, the FGD data were also triangulated with the data collected from the surveys and interviews to cross check the content and identify the emergence of contradictory, contrasting, and connecting themes.

4.5.3 Survey

The final data collection method used in this study, which facilitated the collection of both qualitative and quantitative data, was the survey. Survey research involves the collection of information from a sample of a wider population based on responses to questions, generating standardised data from a (relatively) large number of individuals (Creswell, 2009; Groves, et al., 2004). Recognising the limitations associated with the available secondary data described previously, the survey was designed and conducted to collect the primary data required for this study, and included both open and closed questions.

4.5.3.1 Sampling Method

In both Kenya and Uganda, survey participants were selected through non-probabilistic sampling methods. Acknowledging the benefits associated with probability sampling for generalising findings to broader populations, the absence of suitable sampling frames precluded the use of probabilistic methods for this study. Patton notes,

The logic and power of probability sampling depends on selecting a truly random and statistically representative sample that will permit confident generalization from the sample to a larger population. The purpose is generalization. (Patton, 1990, p. 169)

Probability sampling reduces sources of error, defined as, “random variation from the true characteristics of the population” (Fowler, 2009, p. 13), by giving each member of the target population an equal chance of selection. In practice, degrees of error are inevitable in any sampling method as, “surveys are conducted in the uncontrolled settings of the real world and can be affected by those settings” (Groves, et al., 2004, p. 33). This study was conducted in particularly complex settings, and in order to access a sample of the target population it was necessary to employ a flexible approach to survey data collection.

Firstly, door-to-door and postal surveys were rejected as inappropriate. Within slum areas and refugee settlements, streets lack signage and even names, housing is ad-hoc, and all residents may not be officially registered (Grabska, 2006). In refugee settlements these issues are compounded by the temporary nature of dwellings and high turnover of residents (UNHCR 2015). These challenges have previously been documented, for example Jacobsen and Landau (2007) describe the difficulties of ensuring random selection of participants in the absence of available sampling frames, noting that most researchers studying migrants and refugees rely on snowball sampling and small sample sizes, increasing risks of bias.

Online surveys and online digital data processing are gaining popularity in Western contexts and offer cost and scale benefits. However, online sampling excludes all but the wealthiest participants in developing world settings (Munro, 2012), and was therefore inappropriate for this study. A telephone survey was inappropriate as the study draws on data from users and non-users of mobile phones, and fixed line telephony remains uncommon in both Kenya and Uganda (Sharma & Gillet, 2014). Furthermore, literacy and language barriers were a consideration when designing the survey strategy. Self-completion surveys inevitably exclude illiterate and poorly educated respondents. Conducting questionnaires in person provided a means to access otherwise inaccessible respondents, increasing opportunities for participation.

Recognising the challenges associated with accessing a probabilistic sample, the sampling strategy of this research was opportunistic, targeting adult mobile users and non-users in target areas affected by crisis and violence in Kenya

and Uganda. Surveys were conducted in public areas characterised by high footfall during working hours, inviting every 6th passer-by to participate to reduce selection bias. This opportunistic method was appropriate for this study given the aims and constraints of the research and target sample, acknowledging that the strategy precluded the generalisation of statistical findings to wider populations. Despite this, the survey data collection strategy enabled the identification of patterns and trends to inform the development of theoretical and analytical generalisations.

4.5.3.2 Local Research Assistants

The survey questionnaires were designed to be administered by local research assistants. In a study of Sudanese refugees in Cairo, Grabska notes that using local researchers enhanced the security of both respondents and researchers as, "precarious security conditions made it difficult for western (white) foreigners to access the households of those refugees" (Grabska, 2006, p. 291).

Accordingly, the majority of Grabska's interviews were conducted by Sudanese refugee research assistants (six men and two women). Donner (2006) also reports using six trilingual research assistants to collect survey data on mobile phone use in markets in Rwanda. Reflecting on the use of local assistants when conducting research among multi-ethnic groups, Grabska notes,

As the refugee community is quite diverse and there are certain levels of mistrust and tensions between different tribes and ethnic groups, research assistants were selected from a variety of backgrounds and from different regions in Sudan. (Grabska, 2006, p. 291)

Acknowledging that working with locals is widely believed to improve the ease of conducting field-based research, Jacobsen and Landau note that it can also introduce ethical and methodological issues. They note that in highly sectarian countries the, "research assistant may be associated - by name, appearance, access, style of dress - with a group the respondent either fears or despises" (Jacobsen & Landau, 2003, p. 9). They caution that involving local people in the data collection, "risks transgressing political, social or economic fault-lines of which the researcher may not be aware" (Jacobsen & Landau, 2003, p. 9). This risk is acknowledged in the present research, but it was determined that the

benefits outweighed these potential risks. Logistically, local researchers were better equipped to navigate the areas and relate to local respondents than a white European researcher. Local fieldworkers were also fluent in local languages and familiar with appropriate behaviours and customs, increasing the ease with which respondents were able to relate to them. As a reliability check, the questionnaires were coded to include the name of each administrator in order to enable the identification of systemic biases which may be associated with any particular individual.

Research assistants were recruited according to several criteria. They were required to have previous research experience, be fluent in at least one local language, be over the age of 18 and be comfortable working in the selected areas. They also reflected a range of ethnic affiliations. This was particularly critical in Kenya where ethnicity was identified as a crucial factor in the post-election violence (CIPEV, 2008). Both male and female fieldworkers were recruited. Local translators, both male and female, were also recruited within the Kyangwali settlement according to UNHCR recommendations, chosen for their fluency in the numerous local Congolese dialects.

Survey administrators were provided with thorough training prior to their deployment in the field. Fowler and Mangione describe the importance of survey interviewer training, noting that, "the evidence is clear that a lack of standardized interviewing procedures will produce significant, identifiable interviewer-related error" (1990, p. 30). They argue that maximising the consistency with which survey is administered reduces interviewer-related error, and suggest providing standardised procedures for interviewers to follow. These include requiring interviewers to read the questions precisely as they are worded, to record answers precisely as they are spoken, probe for clarification (if required) in an unbiased manner, and to communicate a neutral, non-judgemental stance. They prescribe that,

...the interviewer should not provide any personal information that might imply any particular values or preferences with respect to topics to be covered in the interview, nor should the interviewer provide any feedback to respondents, positive or

negative, with respect to the specific content of the answers they provide. (Fowler & Mangione, 1990, p. 33)

While it has been demonstrated that seemingly small changes in the wording of questions can result in differences of interpretation and response (Shuman & Presser, 1981), other studies suggest that standardisation may actually *increase* measurement errors by limiting interviewers' ability to clarify meaning, resulting in differences in interpretation (Suchman & Jordan, 1990). Suchman and Jordan (1990) propose a more conversational survey interview style, in which *meaning*, rather than *wording*, is standardised as far as possible, arguing that this style produces more accurate responses than standardised interviews. However, Schober and Conrad (1997) acknowledge that while the conversational style increases accuracy, it also increases the duration of interviews. For this research a conversational survey interview style was adopted. Accepting that this style can increase the duration of interviews and introduce additional bias, the heterogeneity of the research participants and variety of languages and cultures required a flexible approach. This style of survey administration facilitated clarification of both the aims of the research and the questions included in the survey instrument.

Survey administrators attended a half-day training session prior to conducting the surveys. The team was first introduced to the aims and scope of the research, and invited to share their previous experiences in conducting research and administering questionnaires. The methodology was introduced, including the sampling method and the need to record response rates. Practical and security considerations were discussed including suggestions regarding how to respond to questions about the survey and research project, appropriate responses to those not wishing to participate, and broader safety considerations. The team were encouraged to ensure that their appearance and dress was appropriate, and to maintain a pleasant demeanour and a neutral tone and manner throughout the survey administration in order to minimise the risk of interviewer bias. The questionnaire was discussed in depth, including procedures for framing and standardising the question formats, methods to clarify questions, and appropriate prompts. This was followed by a discussion of research ethics, particularly focusing on participants' rights to anonymity and to withdraw at any time, and the need to obtain their informed consent prior to

participation. The team were then invited to review the participant information sheet and provided feedback on its clarity and design. They also offered suggestions for the refinement of the survey tool, including the replacement of terms for commonly-used local terminology (e.g. describing electoral candidates as 'aspirants'). An outline of the training session is provided in Appendix 6.

4.5.3.3 Procedures

Prior to deploying questionnaires in the field, a pilot study or pre-test is recommended in order to identify potential issues and sources of misunderstanding (Fowler, 2009). An initial pilot study was conducted immediately after the training period using a convenience sample of passers-by in order to reveal inconsistencies and design weaknesses in the questionnaire and any other concerns or issues around its administration.

Feedback was sought from questionnaire administrators on their impressions and experiences during the process of administration and the completed questionnaires were carefully examined, identifying ways in which the instrument could be refined, including clarifying the structure of questions and adding guidance information for the survey administrators. Logistical challenges were identified and addressed at this pilot stage. Following training and the pilot study, questionnaires were revised and administered by local research assistants in each of the selected locations.

In Kenya, fieldwork sites were selected according to the reported occurrence of violence during the 2007-8 election period. Within Nairobi, target areas were disadvantaged suburbs characterised by slum-style dwellings. Two of the selected areas, the informal settlement of Kibera and the Somali-dominated suburb of Eastleigh, were violent hotspots during the 2007/8 post-election period (CIPEV, 2008; Deacon, 2013; Rawlence & Albin-Lackey, 2008). The other two selected areas, Mathare, one of Africa's largest urban slums and Kawangware, another slum area, were less seriously affected by violence during this period (CIPEV, 2008).

The cities of Naivasha, Nakuru and Eldoret along the Rift Valley (see figure 4), were also selected as they also experienced high levels of inter-ethnic violence during the 2007/8 post-election period (Deacon, 2013; Livingstone, 2013; Rawlence & Albin-Lackey, 2008). Within each area, public locations were

chosen for the administration of the questionnaires. These were characterised by high footfall, access to public transport, and selected to maximise the safety of the research team.



Figure 4: Map of Kenya marked with data collection locations

A total of 297 adults were surveyed in Kenya: 202 in Nairobi over two week-days between the hours of 7am and 7pm, and 95 in the cities of Nakuru, Naivasha and Eldoret in the Rift Valley, during similar times over a three day period.



Figure 5: Map of Uganda marked with data collection locations

Kampala is home to the second highest concentration of refugees in Uganda, after Nakivale settlement. In 2012 there were an estimated 50,000 refugees residing in Kampala (Omata & Kaplan, 2013). In Kampala, the low-income areas of Nsambia, Kibuye, Katwe, Nakulabye and Kisenyi were selected as they are inhabited by majority migrant and refugee populations (Krause-Vilmar, 2011; Omata, 2012; Omata & Kaplan, 2013; Urban Refugees, 2014). Kyangwali settlement is a large refugee camp protected by UNHCR in Hoima District, near to Lake Albert in the West of Uganda (see figure 5). It is home to around 25,000 refugees, scattered across 14 villages in an area of around 90km². In Kyangwali settlement, questionnaires were administered in the villages of Malembo, Kentome, Kasonga and Kagoma.

In Uganda the survey was conducted in each of the target areas over two weekdays in Kampala between 7am and 7pm, and four weekdays in Kyangwali settlement between 11am and 4pm¹⁰, with 194 respondents.

4.5.3.4 Survey Instrument

The survey questionnaires are provided in Appendices 1 and 2. The questionnaire administered in Kenya comprises four sections and consists of 57 open and closed questions. Several styles of questions were used, including multiple choice, checklists (allowing the selection of multiple responses) and Likert style attitude scales. The survey also included interpretive components, providing space for explanations of attitudes and actions, for example sub-questions asking, “how did you feel about that?”, and aimed to collect data on demographic and socio-economic characteristics of the respondents, including gender, income, age, education and marital status. Questions were also included about various aspects of mobile phone use, including whether the respondent had access to or owns a mobile phone, the number and type of handsets and SIM cards owned, the number of outgoing and incoming calls, frequency of SMS sending and receipt, and average spending on mobile phone use. Administration of the final section of the questionnaire was preceded by a reminder that participation was voluntary and respondents could decline to answer particular questions. Respondents were then asked about their communication habits and methods of accessing information, including political information, their role in the community, political activities and trusted leaders, as well as their receipt of hate-speech and pro-peace SMS, and attitudes to regulation and monitoring of mobile phone use.

The questionnaire administered in Uganda contained 42 open and closed questions covering demographic information, mobile phone ownership and use habits, preferred methods of communicating, means of accessing information during periods of crisis, and benefits and risks of mobile phone use.

¹⁰ As there were no available accommodation options in or near the Settlement it was necessary to commute there each day from Hoima: the district capital located 80km away, three hours' drive away along poor roads. It is not advisable to drive during the hours of darkness in Uganda due to the high risk of accidents, and accordingly working hours were unavoidably reduced.

4.5.3.5 Limitations

The survey data collected are inevitably constrained by a number of limitations including scale, generalisability, and reliability. Examining first the scale of the survey sample, a total of 297 participants were sampled in Kenya and 194 in Uganda. These small sample sizes are insufficient to provide representative data on the populations of interest. Furthermore, the selection of a random sample was precluded by the absence of a reliable sampling frame, and the logistical considerations outlined previously in this chapter. Although the selection of a non-probabilistic sample reduces the broader generalisability of the data collected, these survey data are nevertheless valuable to inform the development of theory for this exploratory study.

Considering next the generalisability of the survey findings, the selection of public locations for the collection of survey data may systematically exclude certain demographic groups (e.g. the elderly, disabled, new mothers) from participation. Chambers (2008) acknowledges this as a recurring bias particularly affecting developing world research studies. Chambers notes, "...within villages, the poorer people may be hidden from the main streets and the places where people meet" (2008, p. 32). Another particular bias in the sampling frame concerns participants engaged in commercial activities. This is described by Omata (2012) during the conduct of semi-structured interviews with refugees in Uganda, where many interviewees were engaged in ongoing, informal business transactions which affected their participation through constant interruptions from customers. Recognising that this and similar challenges inform participation in both the survey and FGDs, overcoming these is challenging and beyond the scope of this study, within the financial and time constraints. Furthermore, as it comprises an exploratory study, these limitations may be addressed in further extensions of the research to examine the perceptions and experiences of these particular demographic groups.

In Kenya, the survey targets participants in urban centres previously affected by election violence, excluding rural populations from the survey sample as election violence occurred primarily in urban areas. In Uganda, rural populations were specifically targeted through the collection of data in both urban Kampala and rural Kyangwali settlement. Logistical considerations played a part in the selection of the settlement for data collection, a common bias in research

conducted in the developing world according to Chambers (2008). He describes how vehicular access is a critical factor mediating academics' understanding of the developing world noting, "...overlapping urban, tarmac and roadside biases" (Chambers, 2008, p. 31) resulting from data collection privileging urban populations and those living along major roads and excluding those living in inconvenient, inaccessible locations. Acknowledging that certain systematic biases are likely to occur within the non-probabilistic survey sample, the convenience sampling method employed in this study provided a means to access primary data in challenging conditions which precluded the use of probabilistic methods.

Another limitation of this study concerns the reliability of the data collected. As these data comprise users' perceptions and experiences, there exist no objective criteria against which to assess their consistency. Self-reported information about past events is inevitably subject to recall bias (Baddeley, 1979; Eisenhower, et al., 1991), which may distort the survey data collected in this study. Eisenhower, Mathiowetz and Morganstein note that,

To the extent that an individual is not able to recall the occurrence of an event or details about past events, or is affected by his or her present psychological state or environment, the quality of the data becomes questionable.
(1991, p. 128)

Eisenhower, Mathiowetz and Morganstein (1991) further argue that episodic memories, those associated with spatially and temporally situated events, are subject to three potential biases: Accuracy, incompleteness and distortion. Based on several psychological studies they argue that memories are likely to be malleable and subject to change over time. Recognising the potential of these biases to influence the data provided by participants about their experiences and perceptions of past events, the use of multiple methods facilitates the triangulation of FGD responses with those of survey and interview participants.

Numerous potential sources of error have been identified in surveys, defined by Groves et al. as, "deviations from the true values applicable to the population studied" (2004, p. 4). Groves et al. further note that, "which questions are

asked, how answers are collected, and which people answer the questions – all affect the quality (or error properties) of survey results” (ibid). Bias can also be introduced at several stages including survey design, data collection and data analysis. Data are said to be biased if, "in some systematic way the people responding to a survey are different from the target population as a whole" (Fowler, 2009, p. 13). The design and implementation procedures of the survey were intended to minimise bias, although inevitably some biases remain.

Participants may not answer honestly for a number of reasons, including interviewer effects. While the use of local research assistants may mitigate these risks in part, there remains the potential for ethnic and political differences to inform interpersonal dynamics and introduce bias into the data. Recruiting educated, literate, experienced survey administrators is essential for the effective conduct of social research in settings where insurmountable language or cultural barriers prevent the direct collection of data by the researcher. However, these essential selection criteria may preclude the recruitment of equal numbers of male and female survey administrators and translators. While this methodological challenge may be commonplace, it is rarely acknowledged by other field-based studies (Gill, 1993). This gender imbalance may introduce an additional source of interviewer bias: Study participants may respond differently to male and female administrators, both in terms of response rates and in the content of the responses they provide.

Further reflections on the challenges and limitations associated with the survey administration are provided in Chapter Seven.

4.6 Case Study Design

The research design entailed the in-depth investigation of the relationship between mobile telephony and crime and security in the developing world, utilising primary data collected from two East African case studies. Case studies were particularly relevant for this research topic as they facilitated the investigation of this relationship within real-world settings (Yin, 2009). The triangulation of data from these case studies enables the analysis of a potentially widespread phenomenon within specific instances. Furthermore, this approach benefits from high ecological validity as data are drawn from real-life

settings and enables the researcher to develop theoretical propositions from empirical evidence (ibid). As Eisenhardt and Graebner note,

The central notion is to use cases as the basis from which to develop theory inductively. The theory is emergent in the sense that it is situated in and developed by recognizing patterns of relationships among constructs within and across cases and their underlying logical arguments. (2007, p. 25)

As this suggests, case studies are a valuable research tool for theory-building. In this study, the case studies provide opportunities to examine user perceptions and experiences of the crime threats, benefits and vulnerabilities associated with mobile telephony in particular settings. Furthermore, they provide real-world settings in which to explore the applicability of SCP approaches to address the specific security threats identified. This aligns with Yin's (2009) proposition that the case study method is particularly suitable for research addressing a *descriptive* or *explanatory* question which seeks to explain what, how or why something is happening, and are most appropriate for the study of contemporary events over which the researcher has little control. The rapid and widespread increase in mobile telephone penetration in the developing world, and the associated crime and security threats and benefits, is therefore well suited to case study analysis.

The selected case studies comprise violence-affected mobile phone users in Kenya, and users affected by displacement in Uganda. These case studies were selected to provide opportunities to examine, the applicability of the general theoretical principles of opportunity crime perspectives in these specific contexts. These case studies were chosen instrumentally, as they provide a useful entry point to this emerging issue (Stake, 2003). Thus, they illuminate the general theoretical principle under investigation, and were not selected for their typicality (Mitchell, 1983; Yin, 2009). The two case studies addressed in this study are selected according to their theoretical relevance, providing real-world contexts in which to examine the perceptions of security associated with mobile telephony among crisis-affected populations. The rapid and recent increase in mobile ownership in both case studies, Kenya (2015a) and Uganda (GSMA, 2015b), provide timely opportunities to examine these emerging issues.

Specifically, the widespread dissemination of hate-speech in Kenya, and the importance accorded to mobile telephony for refugees and migrants, informed their selection. These issues are discussed in depth in the initial sections of Chapter Five and Six respectively.

Recognising the weakness associated with case study research concerning restrictions on the generalizability of findings (Yin, 2009), these case studies nevertheless provide a valuable entry point in the analysis of crime and security issues associated with mobile telephony in developing world settings. Although data collected from these particular populations cannot be statistically generalised beyond the population from whom they were collected, the findings of this study generate theory that can be *analytically generalised* (Eisenhardt & Graebner, 2007; Yin, 2009). Thus these case studies provide evidence about the security impacts associated with mobile telephony, and facilitate the exploratory development of theory and classificatory systems to the specific threats identified, and identifying SCP measures to address them.

4.6.1 Kenya

The use of mobile telephony during election periods in Kenya was selected as the first case study. An equatorial East African country bordering the Indian Ocean, Kenya is home to approximately 45 million inhabitants from a diverse range of religions and ethnicities (Yin, 2009). The capital Nairobi is a regional commercial hub and the country is the largest economy in East Africa, although levels of unemployment are high at around 40% (ibid). In 2012, roughly two-thirds of the population of Kenya were reported to use mobile telephony (CIA, 2014a), while GSMA Intelligence estimates that in 2014 SIM penetration reached 72% (GSMA, 2015a). Emerging technological innovation has resulted in the dubbing of Kenya as the 'Silicon Savannah', and the attribution of its reputation for leading Africa in the development and use of digital applications and platforms for development and humanitarian agendas (Meier, 2013). For example, Kenya is widely regarded as the global leader in mobile-money transfers as a result of the success of M-Pesa, a mobile-money service introduced by Safaricom in 2007 with 15 million registered users (GSMA, 2015a).

Kenya and its neighbouring East African countries (particularly Somalia and South Sudan) have been plagued with periodic natural disasters, civil conflict and terrorist attacks (Davis, 2010; FCO, 2014). Kenya has also experienced periodic episodes of terrorism and violence and unrest around election periods, including elections in 2005, 2007 and 2010, exacerbated by viral mobile campaigns (CIPEV, 2008; Dercon & Gutiérrez-Romero, 2012; Goldstein & Rotich, 2008; Okumbo, 2011; Osborn, 2008). Experts predicted that violence would occur during or after the 2013 Presidential elections (Cheeseman, 2008; Hubbard, 2010; Somerville, 2011).

A range of national and international organisations use mobile telephony to communicate with, and seek to influence the attitudes and behaviours of, the general public in Kenya; particularly promoting peace and security (Goldstein & Rotich, 2008; Iacucci, 2013; Meier, 2011b) including NGOs, government agencies and MNOs. With a presidential election in 2013, Kenya provided a timely opportunity to examine the conditions and contexts in which mobile telephony is used for the escalation and de-escalation of political violence, and its perceived impacts on individual safety and security. Literature pertaining to this case study is presented in Chapter Five.

Data were collected in Kenya between 1st and 17th February 2013, in the period immediately prior to the elections in order to minimise the risks associated with potential election violence. This initial period of fieldwork was designed and implemented in anticipation of further theory development and hypothesis testing on the relationship between mobile telephony and violence in the post-election period. However, the first period of fieldwork revealed that preventative measures had effectively prevented hate-speech transmission through mobile phone networks, due in part to the stringent new regulations on hate-speech that precluded the use of mobile networks to promote or facilitate violence and disorder during the 2013 election period. Analysis of the data collected in Kenya revealed that as a result of these regulations, new channels were being exploited to communicate hate-speech, particularly online media (see Chapter Five).

The data collected in Kenya nevertheless yielded fruitful data for theory building, illuminating the wide-reaching crime and security threats,

vulnerabilities and opportunities associated with mobile ownership which the second period of fieldwork sought to examine in more depth. The initial fieldwork period also illuminated the relevance of the research findings to humanitarian and development practitioners and the private sector, and offered an opportunity to explore the challenges associated with the implementation of the selected methods in developing world settings, informing the design of the second period of fieldwork.

4.6.2 Profile of study participants in Kenya

4.6.2.1 Survey

A total of 297 adults were surveyed in Kenya: 202 in Nairobi and 95 in the Rift Valley. The recorded response rate in Nairobi was 87% and 88% in the Rift Valley province. Of these 297 respondents, 291 (98%) were mobile phone owners and a further three (1%) described sharing access to a mobile phone. Only three (1%) were not mobile phone users. Of the 291 mobile phone owners, 116 (40%) reported owning more than one SIM card and 33 (11%) more than one handset. Just under half of the survey sample (n=140) described being affected by political violence during the 2007-8 post-election period.

Almost two thirds of the survey sample (n=189) was male and one third (n=107) female. The sex ratio of the Kenyan population was roughly equal (CIA, 2014a), suggesting that this unequal distribution among study participants (twice as many male respondents as female) is indicative of a non-representative survey sample. Examining the survey sample also suggests a bias towards more youthful participants. More than two thirds of the sample (n=207) was aged under 35 and none of the sample reported ages above 65 years. The distribution of the sample across age and sex categories is presented in figure 6.

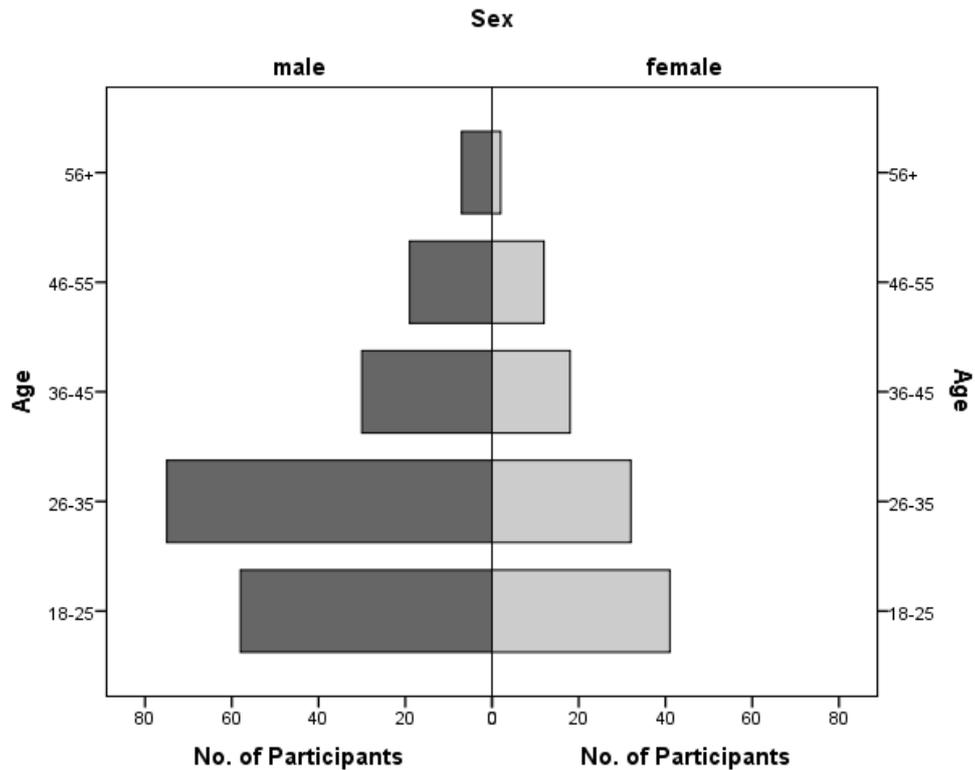


Figure 6: Age pyramid of the Kenya survey sample

The age pyramid demonstrates a wide base in the lower age groups with a narrowing as age increases, characteristic of a youthful developing world population with low life expectancy. The median age in Kenya is 19.1 years (CIA, 2014a) compared to 40.4 in the UK (CIA, 2014c). The average life expectancy in Kenya at the time of the study was around 62 for men and 65 for women (CIA, 2014a) compared to 78 for men and 83 for women in the UK (CIA, 2014c). As participants below the age of 18 were not sampled, this excluded more than 42% of the population of Kenya (CIA, 2014a).

Participants also provided information about their educational level (presented in figure 7).

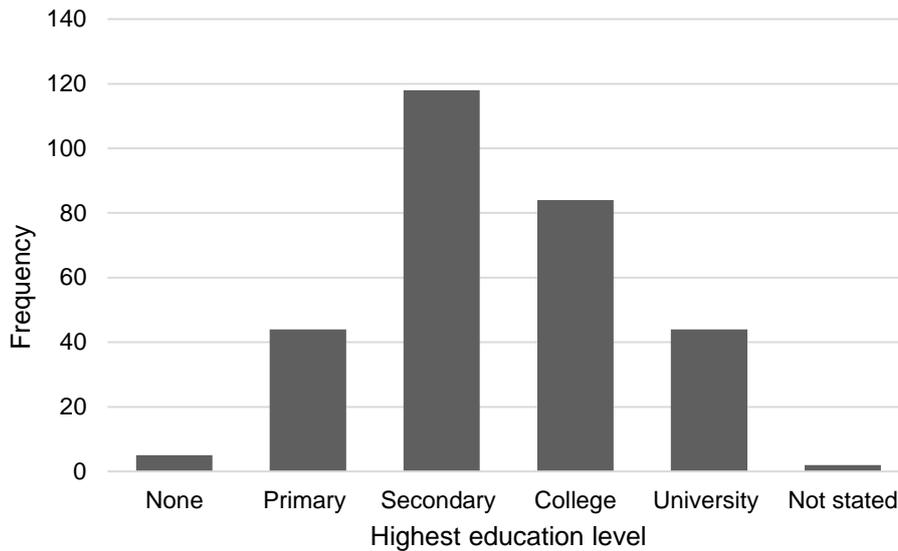


Figure 7: Educational profile of survey respondents in Kenya

The self-reported education information provided by respondents suggests that they were relatively highly educated, with more than one third reporting tertiary education (college or university). Although specific data on tertiary education in Kenya are unavailable, it seems unlikely that these high rates are representative of the wider population. These data are therefore likely to be indicative of bias within the survey sample and may be a function of the locations of data collection in urban centres, proximate to university campuses and colleges.

Categorical data were collected on respondents' income, presented in figure 8.

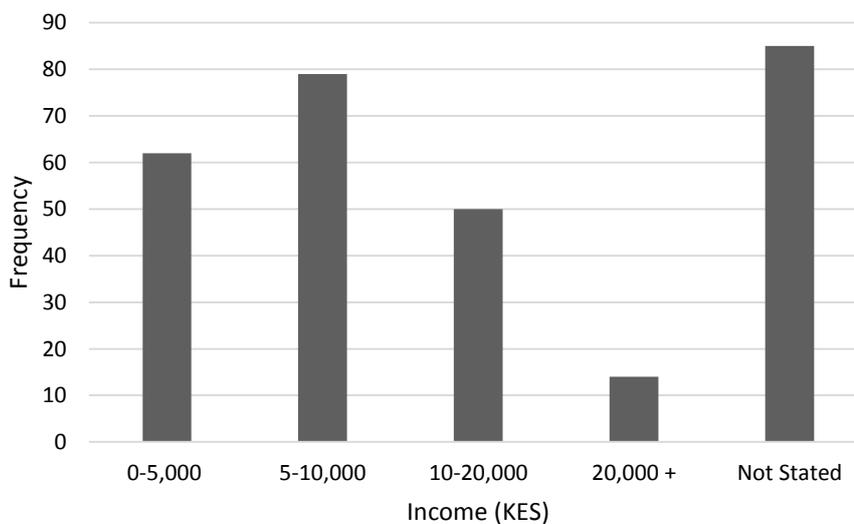


Figure 8: Reported income of survey respondents in Kenya

Respondents self-identified as members of 27 ethnic groups, reflecting the diversity of ethnicities in Kenya reported in Census data (CIA, 2014a). Ethnic group categories with sample sizes smaller than five are aggregated and categorised as 'other' (figure 9).

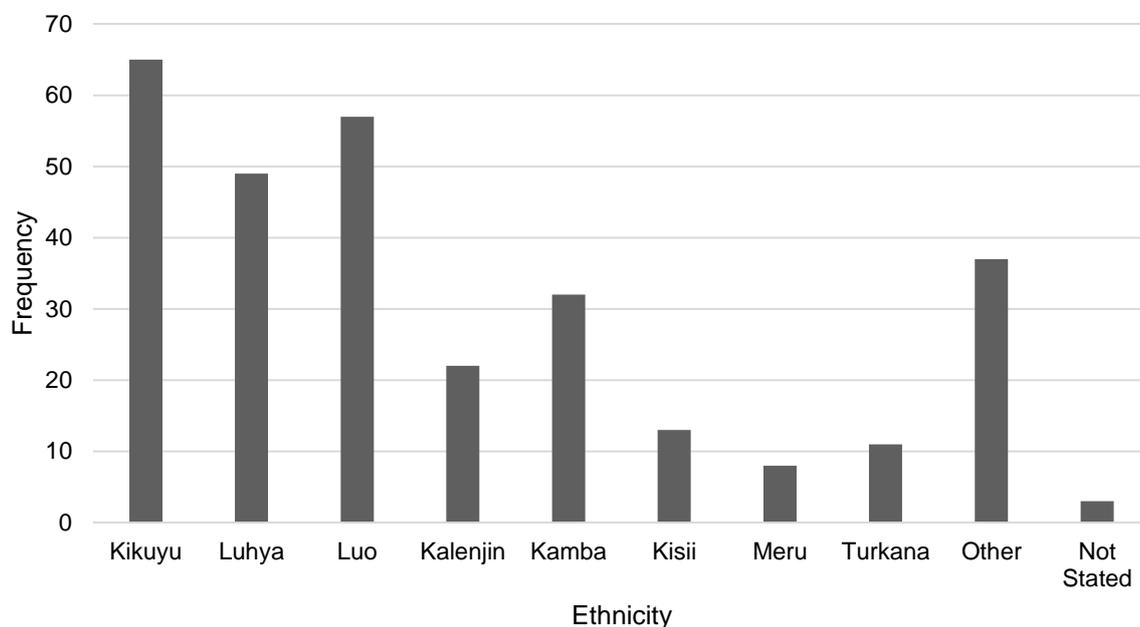


Figure 9: Ethnicity of survey participants in Kenya

4.6.2.2 Focus Groups

The profile of FGD participants are provided in tables 6 and 7 below.

Table 6: Profile of FGD participants in Naivasha, Kenya

Age	Sex	Occupation	Ethnicity
49	Male	Community Leader	Luo
18	Female	Student	Kisii
29	Male	IT instructor	Kuria
30	Male	Driver	Kikuyu
25	Female	Secretary	Kisii
25	Male	Student	Luhya
33	Female	Business woman	Kikuyu

Table 7: Profile of FGD Participants in Nakuru, Kenya

Age	Sex	Occupation	Ethnicity
38	Female	Church Leader	Kikuyu
23	Male	Student	Luo
27	Male	Student	Kikuyu
45	Male	Driver	Luo
31	Female	Shop Attendant	Luhya
31	Female	Radio Presenter	Kikuyu
34	Female	Head Teacher	Kisii

4.6.2.3 Interviews

Interviews were conducted with representatives of nine organisations using SMS for peace building and violence prevention (see table 8).

Table 8: List of interviewees in Kenya

Role	Organisation
Chief Executive Officer	PeaceNet
Country Director	Electoral Institute for Sustainable Democracy in Africa
Coordinator	Creative Artists for Change Platform for Citizens Voices
Vice-Chairman	PeaceNet
Programme Officer	National Conflict Early Warning and Early Response. Ministry of State for Provincial Administration and Internal Security
Project Manager	iHub Research
Humanitarian Reporting Officer	UN OCHA (Office for the Coordination of Humanitarian Affairs)
Chief Executive Officer	Frontline SMS
Regional Manager	GSMA

4.6.3 Uganda

The second case study examines the crime and security impacts of mobile telephony perceived by migrants and displaced populations in Uganda. Field research was conducted between 17th and 27th October 2013. In Uganda, the research was conducted during a period characterised by the rapid influx of refugees fleeing instability in neighbouring Democratic Republic of Congo (DRC) as a result of the 2013 M23 rebellion (Beck, 2013). This case study provides the opportunity to examine the perceptions and experiences of mobile-facilitated crime and security impacts on displaced populations.

A landlocked East African country bordered by Kenya, South Sudan, the Democratic Republic of the Congo, Rwanda and Tanzania, Uganda is home to a population of around 35 million inhabitants (CIA, 2014b), including over 350,000 refugees (UNHCR, 2015). The majority of the refugees in Uganda originate from the Democratic Republic of the Congo (DRC), Sudan and Somalia, nearly two-thirds of whom arrived between 2010 and 2015 following conflict and insecurity in their countries of origin (UNHCR, 2015). Mobile penetration in Uganda is estimated at 64% (GSMA, 2015b), although disaggregated data are unavailable on access and use rates among migrants. Like Kenya, Uganda is affected by crime and terrorism threats (Davis, 2010). As a result of instability in the East African region, Uganda is home to over 350,000 refugees (UNHCR, 2015).

4.6.4 Profile of study participants in Uganda

4.6.4.1 Survey

A total of 194 questionnaires were completed during the fieldwork period, including 101 in Kampala and 93 in Kyangwali. The recorded response rate in Kampala was 66% and in Kyangwali was 96%. The sample was fairly evenly divided between male (56%, n=108) and female (44%, n=86) respondents. Of the survey sample, 71% (n=137) reported owning a mobile phone and a further quarter of non-owners (n=15) reported sharing access to one. Disaggregating this figure reveals discrepancies between the two fieldwork sites. Mobile ownership was reported by fewer than half of the survey sample in Kyangwali (n=43) compared to around 90% (n=94) in Kampala.

Survey respondents' ages were recorded categorically. None of the sample reported ages above 65, and categories above this age were removed prior to analysis. Around two thirds of the sample (n=130) were aged under 35. The distribution of the sample across age and sex categories is presented in figure 10.

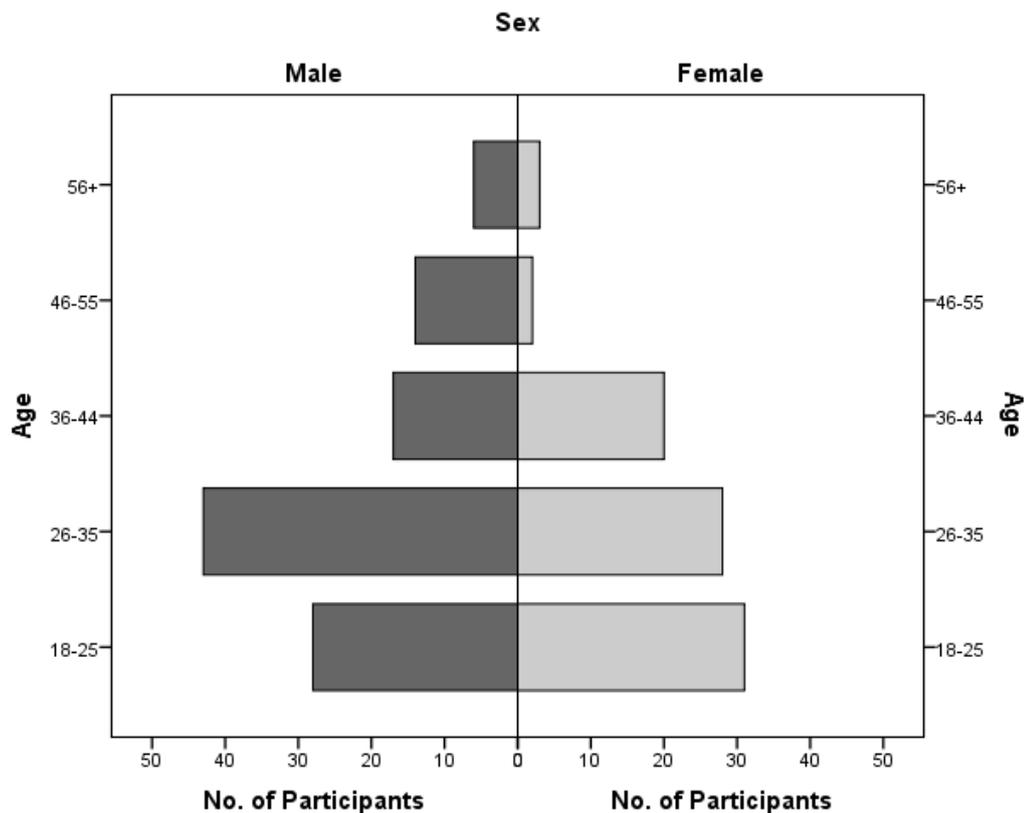


Figure 10: Age Pyramid of the Uganda Sample

The age pyramid shown in figure 10 demonstrates the age and sex distribution of the sample, with a skew towards youth consistent with the Kenya survey sample. The median age in Uganda is 15.5 years (CIA, 2014b) compared to 19.1 in Kenya (CIA, 2014a) and 40.4 in the UK (CIA, 2014c), while the average life expectancy in Uganda is around 53 for men and 56 for women (CIA, 2014b). As participants below the age of 18 were not sampled, around half the Ugandan population were excluded (ibid).

The educational profile is presented in figure 11, disaggregated by fieldwork site. The data reveal distinctly different educational profiles for participants in Kampala and Kyangwali, with higher educational qualifications described by participants in urban Kampala.

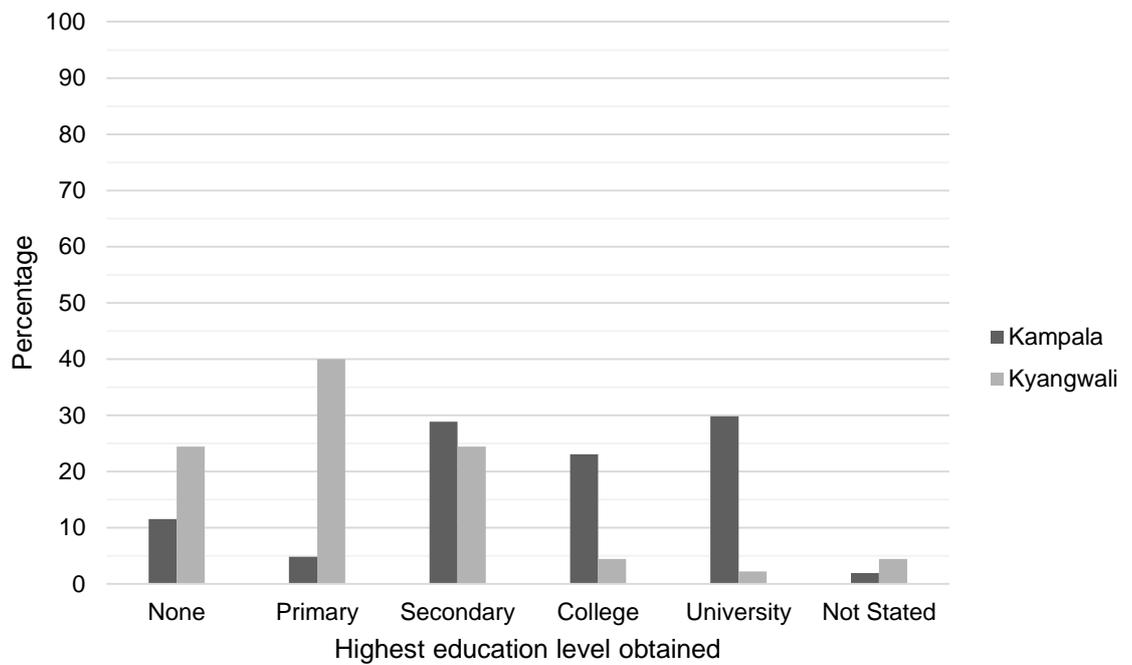


Figure 11: Educational profile of survey participants in Uganda

Respondents' incomes in Uganda were also recorded categorically (figure 12). Almost half (48%) of the respondents reported a monthly income in the lowest category of 0-200,000UGX. A further 25% answered 'prefer not to say'. In Kyangwali, 82.2% of respondents reported being in the lowest income category.

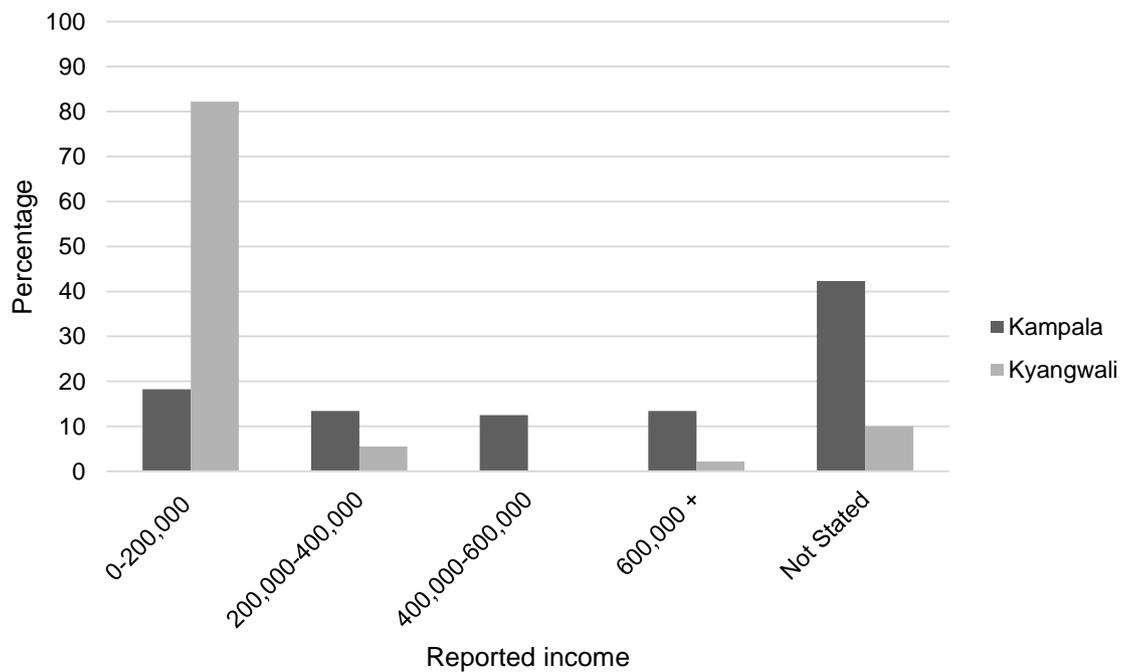


Figure 12: Reported income of survey participants in Uganda

Demographic information collected on participants' countries of origin reveal that over two thirds of the survey sample are Congolese and a further 10% report originating from South Sudan. Participants from eleven countries are represented in total, including all neighbouring East African countries (figure 13).

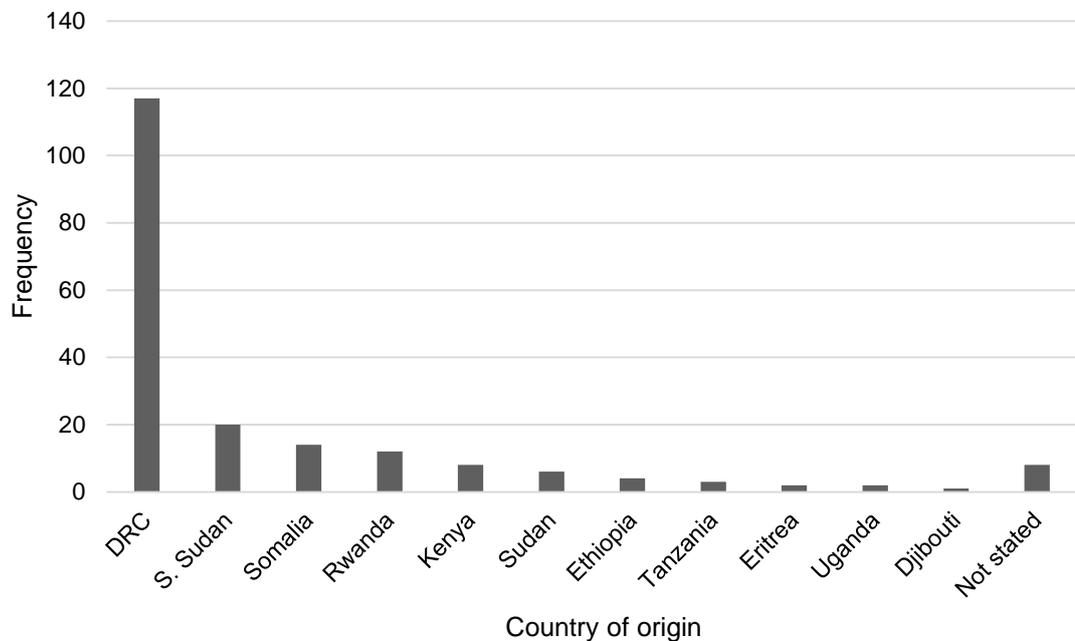


Figure 13: Country of origin of survey participants in Uganda

These demographic data demonstrate that the survey sample in Uganda includes a diverse range of participants, with particular differences emerging between participants in urban and rural fieldwork sites. The majority of the sample is Congolese refugees and migrants, with some representation of other ethnic groups. These survey data provide a valuable resource for the analysis of the crime and security threats associated with mobile telephony amongst displaced populations.

4.6.4.3 Focus Groups

Three FGDs were conducted in Uganda, although for reasons described in the previous chapter and analysed in 7.7, a profile of the FGD participants is unavailable.

4.6.4.2 Interviews

In Uganda, informal interviews were conducted with members of organisations providing services within Kyangwali settlement and with local leaders (see table 9).

Table 9: List of interviewees in Uganda

Role	Organisation
Youth Leader	Kentome Village
Chairperson	Kentome Village, Convoy 2
Bishop	Malembo Village
Programme Officer	UNHCR
Programme Officer	American Refugee Committee

4.7 Data Analysis

After the qualitative and quantitative data were collected, they were analysed to explore the relationships between mobile telephony and a range of crime and security threats.

This section describes the methods through which these data were organised and interrogated in order to reveal patterns and relationships and to contribute to theory development. Table 10 summarises the methods of analysis used for each type of data.

Table 10: Data Analysis of Different Methods

Research Method	Data Type	Method of Analysis
Questionnaire (closed questions)	Nominal, ordinal and continuous quantitative data	Descriptive statistics
Questionnaire (open questions)	Transcribed text	Thematic content analysis
FGDs	Transcribed text	Thematic content analysis
In-depth Interviews	Transcribed text	Thematic content analysis

The qualitative and narrative survey, interview and FGD findings were transcribed, annotated and analysed using thematic content analysis in Nvivo (Version 10).

The quantitative survey data were coded into SPSS (Version 22) datasets and analysed using SPSS and Excel tools. Descriptive analyses were performed to examine the characteristics of the sample in terms of age, gender, education, income and ethnicity, and to identify patterns in user experiences and perceptions of security threats and benefits associated with mobile telephony.

4.8 Research Ethics

The research accords with UCL Research Ethics Framework. All participants were fully informed about the aims and scope of the research. During the data collection, participants were given opportunities to ask questions, and the contact information of the researcher was provided in case any follow-up information was required. The research involved no forms of deceit or coercion, and all research subjects were asked for informed consent prior to participation. All participants were over the age of 18, and were provided with, or read, the participant information sheet (Appendix 7).

Participants were informed that all involvement in the study was voluntary, they retained the right to withdraw at any time, or to decline to answer any or all questions. Participants were invited to share only as much as they feel comfortable with, particularly when questions were asked which could cause emotional responses such as recalling political events that had occurred several years previously. Every possible effort was made to manage potential risks to participants and survey administrators during the fieldwork, and administrators were encouraged to use their judgement and terminate any interviews in which respondents appeared uncomfortable.

During the study no personally identifying data were collected, all survey responses were anonymous, and FGD participants' personal information was not recorded. Interview participants were given the option to remain anonymous in this thesis and subsequent publications. All primary data is securely stored on password-protected computers. The researcher accepts responsibility for ensuring that the research data are securely handled and stored.

In order to ensure the safety of the local research assistants and participants engaged in the study, the research team conducted the survey in teams of two, in pre-identified well-lit areas of high footfall during daylight hours and were encouraged to remain in regular contact with the researcher. The team was

invited to debrief at the end of each working day to ensure that concerns were addressed promptly.

Every possible care was taken during this study to ensure that participants were treated with respect and dignity. The UCL ethical guidelines were followed closely. The researcher also assumed responsibility for sharing any relevant data analysis with the relevant service providers within the settlement, in order to facilitate improvements to future ICTD programming.

The final section of Chapter Seven comprises reflections on the logistical and ethical challenges experienced during the collection of data for this study.

4.9 Conclusion

This chapter has outlined the challenges and opportunities associated with researching crime associated with mobile phones in developing world settings. It describes the research design and selected methods of the study, comprising in-depth interviews, focus groups and surveys. The two case studies, populations affected by violence in Kenya and displacement in Uganda, are described and the profile of study participants in each country presented. The chapter also explains the methods of data analysis, and overviews the ethical considerations of the study.

Chapter Five: Kenya

5.1 Introduction

In this chapter the background and findings of the first case study are presented, examining the risks and benefits associated with the use of mobile telephony for crime and security in Kenya. The chapter commences with an introduction to the background literature grounding this case study, examining the viral dissemination of hate-speech through mobile phone networks and its implications for crime and security in Kenya. Preventative legal and institutional measures inhibiting the misuse of mobile phones are examined, and mechanisms designed to leverage mobile phone networks crime prevention and reporting are also identified.

The second part of this chapter presents the analysis of the primary qualitative and quantitative data collected. The research findings reveal users' ambiguous perceptions of the relationship between mobile telephony, security, and insecurity. The chapter present users' experiences of interconnected security benefits and threats, while also illuminating experiences of, and attitudes to, crime prevention mechanisms.

5.2 Mobile telephony, crime and security in Kenya

Mobile phones have been widely associated with the large-scale organisation of political violence in Kenya, and policy responses and prevention mechanisms have emerged from both governmental and non-governmental organisations. Kenya therefore provides a useful case study through which to investigate the relationship between mobile telephony, crime and security.

5.2.1 Mobile phones and crime

Kenya has experienced a tumultuous political history (Branch, et al., 2010). Since the reintroduction of multi-party politics in 1992, election periods have been characterised by violent clashes between ethno-political groups and widespread evidence of corruption (Branch, et al., 2010; IREC, 2008). Kenya is ethnically, linguistically and culturally diverse, and politicians have exploited tribal loyalties and historical grievances to mobilise voters in exchange for rewards of land and public services, resulting in inter-ethnic conflict and

outbreaks of violence (Branch, et al., 2010; Cheeseman, 2008; Dercon & Gutiérrez-Romero, 2012; Ghoshal, 2011). This political history, characterised by cross-cutting tribal loyalties, provide fertile grounds for inter-ethnic tensions which can escalate into violence. Mobile phones provide a powerful tool for mobilising groups, and in this case for the organisation of violence and the dissemination of rumours and threats.

Mobile phones were used during both the 2005 constitutional referendum (KNCHR, 2006) and the 2007/8 presidential elections (CIPEV, 2008), when they were implicated in the orchestration and incitement of widespread inter-ethnic violence. Following the 2007 election, rumours of electoral fraud abounded in mobile phone communications, and violence erupted across Nairobi, Rift Valley, Western, and former Coast Provinces, encompassing areas of the capital city and regional capitals Eldoret and Nakuru as well as smaller towns (CIPEV, 2008; KNCHR, 2006; Rawlence & Albin-Lackey, 2008). Mobile phones have been widely associated with insecurity in Kenya, as a consequence of their use for the escalation of violence.

A subsequent inquiry commissioned by the Government of Kenya recorded 1,133 deaths and 117,216 instances of property destruction during the 2007 election (CIPEV, 2008). Drawing on analyses of media reports and pre- and post-violence surveys, Dercon and Gutiérrez-Romero (2012) report even more widespread impacts of the post-election violence than those detailed in the formal inquiry, suggesting that, “violence affected one out of three Kenyans in terms of personal injury, being displaced from home, destruction of property, loss of jobs or earnings, or having a friend or relatives that died in the elections” (2012, p. 732). In this context, mobile phones were implicated in the escalation of crime and disorder as they provided networked opportunities to disseminate rumours and misinformation and coordinate outbreaks of violence. As a large percentage of the population has been affected by this mobile phone-enabled violence, this is likely to inform users’ attitudes to mobile phones and their implications for crime and security.

A key feature of these periods of organised political violence in Kenya was the communications context in which they occur. The official report published by *the Commission of Inquiry into the Post-Election Violence* describes radio

broadcasts and the circulation of malicious hate-speech, “poisoning an already tense political environment” during the 2007/8 post-election period (CIPEV, 2008, p. 216). False and inflammatory rumours, incitements to violence and hate-speech disseminated through radio broadcasts and mobile phone networks were widely implicated in escalating tensions between ethnic groups during the 2005 (KNCHR, 2006) and 2007 election periods (CIPEV, 2008; Dercon & Gutiérrez-Romero, 2012; Goldstein & Rotich, 2008; Osborn, 2008). It can be conjectured that the increasing prevalence of mobile telephony provided opportunities for users to organise and coordinate violence and anti-social activities, and to transmit threatening and offensive messages, at low cost and with little risk of being apprehended.

The previous chapters investigated the relationship between the utilisation of mobile phones for crime and crime prevention, and user perceptions of their crime-facilitating and crime-inhibiting potential. Examining the case of Kenya, a key aspect of the 2007-8 post-election violence was the involvement of state security agencies and political parties in its organisation and perpetration (CIPEV, 2008; Dercon & Gutiérrez-Romero, 2012; Ghoshal, 2011; Rawlence & Albin-Lackey, 2008). According to formal government reports and interviews with victims, the post-election violence was widely regarded as a political tool sponsored by politicians and perpetrated by the organs of the state, including police and military forces (Cheeseman, 2008; Dercon & Gutiérrez-Romero, 2012; Ghoshal, 2011; KNCHR, 2006; Murunga, 2011; Rawlence & Albin-Lackey, 2008). A subsequent government investigation found evidence of serious failures by state security agencies, particularly the police who were deemed responsible for around one third of all recorded deaths¹¹ (CIPEV, 2008).

In contexts where the government is perceived to be unwilling or unable to support its citizens, mobile phones have been shown to provide valuable benefits for users by enabling them to mobilise horizontal networks and access informal sources of support (Best, 2011; Coyle & Meier, 2009; Coyle & Thornton, 2007; Morawczynski, 2009; Rotberg & Aker, 2013). In the case of Kenya, the police were not merely unable or unwilling to protect citizens from

¹¹ Of the 1,133 recorded deaths, 405 were caused by gunshot wounds. The Waki Report attributes all gunshot-related deaths to the police.

crime, they were convincingly implicated in its perpetration. The involvement of police and other security forces in the 2007/8 post-election violence was not anomalous: A Human Rights Watch report published after the 2007-8 post-election violence describes the absence of accountability and a culture of impunity as characteristic of the Kenyan security forces (Ghoshal, 2011). These allegations of corrupt and even complicit security forces described in existing studies, whether true or not, are likely to inform users' calculations of the risks and benefits associated with reporting crime to formal authorities. Where formal security forces are associated with the commission of crime, rather than its prevention, citizens are likely to rely more heavily on informal networks for support and assistance during times of need. Mobile phones fulfil a valuable *informal* security function in such settings, enabling users to communicate and coordinate horizontally, and respond to emerging threats in real time. However, in contexts where the police force are regarded as predatory, or a *potential offender* rather than a *capable guardian* providing security against crime threats, the *formal* crime-inhibiting functions of mobile phones may be seriously impeded.

5.2.2 The prevention of mobile phone crime

Despite the limitations described in the previous section, the recognition of the crime and security threats associated with mobile telephony in Kenya, and the crime detection and prevention opportunities provided by these networks, has catalysed responses from the public and private sector. These include new regulation and the criminalisation of digital forms of hate-speech, the mandatory regulation of SIM cards, the development of early warning mechanisms reliant on user information, and the transmission of unifying messages of peace through mobile phone networks.

Despite the reported prevalence of hate-speech SMS in mobile communications networks during Kenyan election periods, few concrete examples are available in existing studies (IHRB, 2013; Osborn, 2008; Somerville, 2011). Assessing corporate responses to hate-speech during the 2007-8 post-election period, a report by the *Institute for Human Rights and Business* (IHRB) asserts that this dearth of evidence results from recipients' fear of implicating themselves in the transmission of illegal content, compounded by the 'toxic' content of hate-

speech messages that encouraged recipients to delete them upon receipt (IHRB, 2013). Two widely-cited examples recur in existing literature,

No more innocent Kikuyu blood will be shed. We will slaughter them right here in the capital city. For justice, compile a list of Luos you know...

Fellow Kenyans, the Kikuyus have stolen our children's future... we must deal with them in a way they understand ... violence. (Goldstein & Rotich, 2008, p. 4)

These messages specifically incite violence against particular ethnic groups (Luos and Kikuyus respectively) and justify violent actions as revenge for alleged prior attacks and historical land theft. In addition to messages directly inciting violence such as the two examples provided here, SMS were widely used to spread rumours, threats, incitements and misinformation, all variously termed *hate-speech* (Osborn, 2008).

In Kenya, policy responses to the use of mobile phones for the organisation of violence and transmission of threats have largely focused on the prevention and punishment of the transmission of hate-speech. While the Constitution of Kenya (2010) guarantees the right to freedom of expression (Article 33), this does not extend to incitement to violence or advocacy of hatred. Article 24(1) describes “the need to ensure that the enjoyment of rights and fundamental freedoms by any individual does not prejudice the rights and fundamental freedoms of others” (2010, p. 22). Several legal instruments also address the issue of hate-speech in Kenya. Section 77 of the Penal Code prohibits incitement to violence and the promotion of hatred between communities or races, while Section 96 prohibits uttering, printing or publishing words that may cause injury or death amongst a particular community, although Odongo (2012) notes that neither specifically refers to the term ‘hate-speech’.

In response to the widespread misuse of mobile networks during the 2007-8 post-election period and the security threat posed by the circulation of hate-speech, the Government of Kenya also passed the National Cohesion and Integration Act which defines hate-speech as content,

...which is threatening, abusive or insulting or involves the use of threatening, abusive or insulting words or behavior (National Cohesion and Integration Act, 2008, p. 16)

This definition is vague, and the boundaries between legal and illegal electronic content are not clearly delineated. Analysing hate-speech in radio broadcasts during the 2007/8 election period, Somerville notes that, “journalists and academics seem to have an instinctive feel for what is meant by the term ‘hate radio’ or by ‘hate speech’, but there is an absence of rigour in the way it is described and defined.” (2011, p. 85). Somerville (2011) suggests that the lack of specificity in legal definitions, combined with the absence of available examples of hate-speech, limits academic engagement with the topic and precludes analyses of the scale of hate-speech dissemination, and of the connection between hate-speech and violence. Where users are unclear about what they can and cannot legally transmit, this ambiguity may also influence the effectiveness of the laws governing hate-speech and associated preventative mechanisms. Furthermore, it is illegal for newspapers and other media bodies to reprint alleged hate-speech, further reducing the availability of examples of illegal content (IHRB, 2013). Discussing hate-speech during an interview, NCIC Commissioner Odongo explains,

Not all abuses and insults are hate speech. Words only become hate speech if the intention of the maker of the statement is to stir up hatred. The intention of the person can be construed from the context, circumstances, environment and audience. (Odongo, 2012, p 1)

The attribution of malicious intentionality to the originator of hate-speech content is inevitably subject to interpretation, and reveals the complexities entailed in identifying specific content as hate-speech.

In addition to ambiguity around the categorisation of particular content as ‘hate-speech’, the personalised nature of mobile communications introduces a further challenge for research on this topic. According to the IHRB, mobile operators are legally precluded from collecting evidence of hate-speech sent by individual users at the risk of violating user privacy, although the *Prevention of Terrorism Act 2012* permits mobile regulators to intercept mobile communications with a

specific court order (IHRB, 2013). Formally, the National Steering Committee on Media Monitoring, established by the Communications Commission of Kenya (CCK) under the Ministry of Information and Communications and working in tandem with the National Cohesion and Integration Commission (NCIC), is responsible for identifying abusive messages inciting violence, and consulting on legal mechanisms for the prosecution of offenders by the Department of Public Prosecutions (CCK, 2012). During the 2013 election period, this Commission focused “on social media, FM (radio) stations, and blog postings deemed to be spreading tribal hatred” (IHRB, 2013, p. 21), identifying and prosecuting six bloggers accused of using hate-speech. Social media, blog postings and radio broadcasts all provide publicly accessible channels for the dissemination of anti-social content, unlike mobile telephone networks that provide a direct, inter-personal channel concealed from public scrutiny. The increasing prevalence of mobile telephony in Kenya is therefore likely to provide opportunities for users to disseminate content widely, and at low cost.

One of the challenges associated with networked crime such as cyber-crime (Newman & Clarke, 2003), and in this case mobile phone crime, is the trans-national nature of the associated threats. In a report examining corporate responses to hate-speech by Safaricom¹², IHRB note that the bulk SMS packages used to disseminate hate-speech widely in Kenya originated from abroad, lacked identifying caller ID information and enabled senders to bypass internal vetting processes and transmit hate-speech anonymously (IHRB, 2013). Thus, national mobile phone networks may be the instrument for the commission of crimes originating from perpetrators beyond the country’s borders. This presents particular challenging for policy and prevention mechanisms, although it is beyond the scope of the present study to investigate in depth here.

Responding to the use of bulk packages for mass transmission of hate-speech, the CCK implemented *Guidelines for the Prevention of Transmission of Undesirable Bulk Political Content via Electronic Communications Networks* (CCK, 2012) requiring mobile operators to block mass SMS deemed likely to

¹² The largest mobile operator in Kenya, Safaricom originated as a state-owned telecommunications corporation and was incorporated as a private limited liability company in 1997

incite violence during the election period. These guidelines require political parties to provide mobile operators with the content of political SMS for vetting 48 hours prior to dissemination. They also introduced requirements concerning the content of political messages, obligating mobile operators to prevent the transmission of SMS which are “*inflammatory, inciting, hateful or otherwise in violation of the law*” (CCK, 2012, p. 5). According to these guidelines, political messages must be written in English or Kiswahili only, and must be disseminated between 8am and 6pm (ibid). Although this mechanism aims to reduce the bulk distribution of inflammatory content, controlling messages sent by individual users is more problematic. Despite the stringent requirements on bulk SMS issued by the CCK, *The Kenya Information and Communications Act* (CCK, 2009) prevents mobile operators from accessing or vetting private messages sent by individual users. Although an amendment to this Act providing access to some private content was subsequently passed into law in December 2013 (CA, 2013), during the fieldwork period this Act provided a legal framework preventing network operators from disclosing the content of individual SMS, “due to the risk of violating user privacy” (IHRB, 2013, p. 10). Despite this, media reporting around the 2013 election period suggested that monitoring of SMS was widespread (BBC News, 2013; Mukinda, 2013; Mulupi, 2012). Freedom House reports that,

During and after the March 4 (2013) elections, the authorities... asked mobile phone providers to block any text messages that could incite violence. To do so, service providers installed a firewall that could detect messages containing particular words, such as “kill,” which were automatically flagged for further scrutiny (Freedom House, 2013, p. 8)

The Kenyan newspaper Daily Nation reported on an interview with permanent secretary of the Ministry of Information and Communication, suggesting that 300,000 SMS containing hate-speech were blocked each day prior to the 2013 elections (Mukinda, 2013). However, it is unclear to what extent these mechanisms were effectively implemented, and whether or not these blocked messages comprised bulk SMS or content from individual users. Besides anecdotal commentary and media reporting, no formal information has been published on the number and content of blocked messages during this period.

Another key legal mechanism adopted in Kenya to reduce the misuse of mobile networks and increase user accountability is mandatory SIM card registration. This was implemented in Kenya on 31st December 2012 and requiring all mobile users to register active SIM cards using personal identity documents (IHRB, 2013). SIM card registration has been widely implemented across Africa as a mechanism designed to inhibit the misuse of mobile phone networks (Donovan & Martin, 2014; Jentzsch, 2012), as described in Chapter Two.

Several mechanisms have been identified that are designed to *limit or prevent the misuse of mobile phone networks* for criminal and anti-social purposes. The subsequent section investigates mechanisms that have been developed to *leverage the crime prevention opportunities provided by these networks*.

5.2.3 Mobile phones for crime prevention

In addition to these legal preventative mechanisms requiring MNOs to monitor and control content of mobile networks, various organisations sought to actively leverage mobile networks to prevent the predicted recurrence of violence during the 2013 Presidential election (Hubbard, 2010; Cheeseman, 2008; Somerville, 2011). The official *UWIANO¹³ Platform for Peace* aimed to address and counter the misuse of mobiles, and was developed as a collaboration between the *National Steering Committee (NSC) on Peacebuilding and Conflict Management*, the *National Cohesion and Integration Commission (NCIC)*, *United Nations Development Programme (UNDP)* and *PeaceNet Kenya*, in partnership with Kenyan mobile network operators. The multi-level UWIANO strategy enabled mobile users to anonymously report hate-speech, rumours, and misinformation communicated via SMS (NCIC, n.d.), and also disseminated mass SMS broadcasts to promote peace and discourage mobile users from disseminating hate-speech, sending messages such as,

The Ministry of Internal Security urges you to please desist from sending or forwarding any S.M.S. that may cause public unrest. This may lead to your prosecution. (Corbett, 2008)

Non-governmental organisations (NGOs) in Kenya also developed initiatives designed to disseminate peaceful messages in an effort to counter violent

¹³ A Swahili word meaning 'cohesion'

discourses, such as the *PeaceTXT* initiative developed by SiSi Ni Amani (Heinzelman et al, 2011; Martin-Shields & Stones, 2014; Meier, 2011b). Sisi Ni Amani disseminates messages designed to de-escalate tensions and provide a counter-narrative to hate-speech, such as:

When we maintain peace, we will have joy & be happy to spend time with friends & family but violence spoils all these good things. (SiSi Ni Amani, 2013).

Working in collaboration with mobile operator Safaricom, SiSi Ni Amani were provided with 50 million free SMS to disseminate pro-peace messages to registered users of their service prior to the 2013 election (Mutai, 2013). These messages were designed, “to leverage mobile messaging to catalyse behaviour change around peace and conflict issues” (Meier, 2011b), although SMS were disseminated only to mobile users who pre-registered for the PeaceTXT service. This service may function to remind mobile users of both appropriate behavioural norms and legal sanctions, aiming to alert the conscience of users and encourage them not to commit criminal and anti-social activities.

In recognition of the widespread misuse of mobile networks for the escalation of political violence, and in response to predictions of the recurrence of political violence during the 2013 Presidential election (Cheeseman, 2008; Hubbard, 2010), the measures and mechanisms described here were developed to reduce the dissemination of hate-speech in Kenya.

5.3 Research findings

This section presents and analyses the primary data collected in Kenya, including qualitative and quantitative survey (n=297), FGD (n=14) and interview (n=9) data. The methods are discussed in the previous chapter, and research instruments are provided in Appendices 1 and 3. Transcripts of interviews with survey administrators are provided in Appendix 5, while transcripts of recorded interviews conducted with key stakeholders are provided in Appendix 8.

This presentation of the results is structured in three core sections. The first section describes the range of security benefits and crime prevention applications of mobile phones recognised by study participants, and reflects on their particular value for vulnerable groups. The second section examines

threats associated with mobile telephony in Kenya, addressing first the dissemination of 'hate-speech' and introducing methodological challenges associated with researching this type of crime, addressed in more depth in Section 7.7. This section also examines the data concerning the evolution of new, networked crime threats and the associated crime opportunities provided by mobile phones and mobile networks. The third section then overviews actual prevention techniques designed to reduce mobile phone crime, and investigates public support for these techniques, perceptions of their effectiveness and unintended consequences.

5.3.1 Security benefits of mobile phones: reducing crime

The findings of the survey, FGDs and interviews suggest that mobile phones are highly valued for their security-enhancing benefits.

5.3.1.1 Typology of security benefits

Analysis of the FGD data in particular illuminates several critical security benefits associated with mobile phone ownership and use. Study participants were asked to discuss the benefits associated with mobile telephony, and identified a wide range of security-enhancing and crime-reducing impacts of mobile phone ownership and use.

i. Access to informal support networks

The most common benefits identified by FGD participants are concerned with access to emotional, physical and financial support from social networks. These informal networks of support are widely recognised in existing studies, as described previously in Sections 2.2 and 2.3.

In addition to general benefits such as access to friends, family, customers, and employment opportunities, FGD participants in Kenya describe specific security benefits of the increased connectivity to informal social networks. For example, this connectivity was described as an effective mechanism to verify information received through other sources, and thus reduce tension associated with rumour and false information. For example, one participant in Nakuru commented, *"If you increase the amount of communication or friendship between tribes, that would reduce the potential for violence. 'Cause if you get a rumour from one tribe, you can call your friend from another tribe"*.

In addition to enabling users to verify information and counteract rumours, mobile phones also provide users with an informal emergency response mechanism. Users can call for assistance during times of need, and specifically associated this functionality with reductions in crime. For example, in Naivasha, one female FGD participant commented that mobile telephone ownership “*has reduced the rate of crime, because you can call someone like your neighbour for help... you don't need to scream*”, indicating that she felt connectivity to personal networks to be a valuable security benefit. Thus mobile telephony may be regarded as an informal mechanism to reduce disorder by sharing information to overcome rumours and misinformation.

The security benefits outlined above were described by FGD participants as particularly important for certain *vulnerable groups*, particularly the young and the old. FGD participants reflected that children and the elderly were not among the earliest adopters of mobile phone technology, and indicated that they are generally the most recent demographic groups to own personal handsets. They also suggested that both children and the elderly often lack financial resources to initiate mobile phone communications, and use mobile phones as primarily *recipients* of calls and messages. Despite these restricted patterns of use, mobile phones were regarded by participants as a powerful mechanism through which the particular vulnerabilities of these groups could be mitigated. Participants emphasised the importance of mobile phones to enable parents to contact lost children, describing this as a form of safety tether. For example, one female participant in Naivasha stated, “*most kids over ten [own a mobile phone]... if they get lost they can be contacted*”, reflecting on mobile connectivity as a means to assuage parental concerns for the safety of their children.

ii. Secure storage of information

The second most common benefit identified by FGD participants concerned the value of mobile phones for the secure storage of information. In Naivasha a FGD participant explained, “*you can scan documents into a mobile phone, to store things in draft.*” Another participant responded, “*I keep my CV in my phone, then I can always have it with me when I need it*”. Although this benefit was not addressed in the survey nor discussed in the interviews, the FGD

findings suggest that mobile phones are valued by users in Kenya for providing secure storage of a range of documents and photographs, as well as the contact information of other users.

Information storage has previously been identified as a benefit of mobile phones in Uganda by Burrell (2010), and simultaneously as a source of risk among handset sharers. Among study participants in Kenya, handset sharing was not widely reported (around 1% of the survey sample, and none of the FGD participants reported shared use of a handset). In this context, participants described storage functionality as a key security benefit that enabled them to securely store information, photos and documents within their personal handsets.

iii. Access to other modes of communication

Participants widely described the value of mobile phones for 'keeping them in the loop' with other modes of communication. The inter-operability of mobile phones and other modes of communication was regarded as a security-enhancing function of these tools. In particular, they commonly mentioned the radio function offered by even basic handsets as a useful feature for enabling them to access and verify information about current affairs, and potentially about security threats such as outbreaks of violence. For example, FGD participants in Naivasha described, "*listening to the electoral debate using radio*" and "*getting access to 'hot' news from different places*", and "*mobile phones have radio and even TV inside of them*". Most participants reported owning basic handsets, and the majority of these provided access to radio broadcasts. Access to other forms of media, such as television, remained limited but participants clearly recognised the potential of mobile phones to enhance their access to other forms of media. In Nakuru, one participant explained, "*it is common to watch the election with friends on the phone, like the presidential debate, so to know what is happening and to be informed*". Thus a key security benefit of mobile phones is the connectivity with traditional broadcast media, from which information received through mobile networks can be verified. Participants also mentioned potential connectivity with online platforms such as Facebook, but in practice none of the FGD participants personally owned or used mobile phone handsets with Internet capabilities.

Previous studies have identified similar multi-functionality associated with mobile phones in developing world contexts (Batchelor and Scott, 2005; Corbett, 2008). For the purposes of this study, the key benefit is the security-enhancing potential of accessing information from a range of sources to verify or triangulate information received from users' social networks, and furthermore to access information beyond these networks.

iv. Financial transfers

The economic benefits of mobile phones are well documented in existing studies (Abraham, 2007; Aker, 2008; de Silva & Ratnadiwakara, 2008; Jensen, 2007; Overa, 2006), as Chapter Two demonstrates. Participants in Kenya described mobile money services as a powerful security benefit associated with mobile phone use, and none of the FGD participants reported access to formal banking other than m-banking. The ability to instantly and securely make financial transfers, in particular to kin in distant villages, was described as a key benefit. For elders, mobile phones were described as a mechanism to increase economic security, facilitating financial transfers from wealthier family members, as described by a FGD participant in Naivasha who stated, "*Older people have them in the village, so we can send money and help them out*". Participants discussed the savings in time and money associated with m-money transfers, contrasting these with the costly and inconvenient journeys previously undertaken to provide economic support to distant rural kin. They also noted the risk of acquisitive crime associated with carrying large sums of money, or reliance on couriers to transfer cash sums to distant recipients, and described m-money transfers as 'safer'.

v. Other benefits

A range of other benefits were described by participants, ranging from the facilitation of business transactions and providing access to employment opportunities to the organisation of romance. While these benefits may be argued to enhance users' security (financial and emotional respectively), they are not directly related to the focus of the present study on the crime-inhibiting and crime-facilitating opportunities associated with mobile phones. Accordingly they are not addressed here.

5.3.1.2 Crime reporting and crime prevention

In addition to the informal benefits described above, participants in Kenya also identified connectivity to formal security forces as a key security benefit associated with mobile phone ownership. During FGDs, participants initiated discussions about the value of mobile phones to increase the ease of reporting crimes and locating criminals even before the topic had been introduced. This suggests that the relationship between mobile phones and crime prevention and detection is important to users.

In Naivasha, one female FGD participant stated with satisfaction, *“Now every person is connected to a security agent”*. Another responded affirmed this, commenting, *“Mobiles have reduced the rate of crime by increasing (victims’) ease and (offenders’) fear of reporting crimes to security forces”*. Thus not only the opportunities for reporting were regarded as valuable, but the concomitant increase in the risk of detection was also perceived to have reduced offending. For the purposes of this analysis, this is a key finding and is investigated in greater depth in Chapter Seven. FGD participants also discussed the use of geo-location software to track mobile handsets, particularly smartphones. One female participant commented, *“...security can use phone trackers to catch people, like, if a child is kidnapped”*. The group warmed to this theme and discussed high profile news reports about mobile phone location data and call records being used in criminal investigations and prosecutions, expressing hope that mobile phones would provide increasingly sophisticated means to detect, solve and prevent crimes.

The findings suggest that study participants view mobile phones as potential crime inhibitors, providing opportunities to report and respond to a wide range of crime and security threats. However, despite describing the benefits of mobile phones enhancing connectivity to the police, cynicism regarding the relationship between the public and police emerged during both FGDs. In Nakuru, FGD participants discussed historical mistrust and even fear of the police, describing this as a general trend in Kenya. One female participant explained,

“People still fear the police and you wouldn’t take refuge at a police station... for a long time the police were never looked at as being friendly to people, you know, it’s a stigma thing...”

FGD participants in Nakuru also expressed disdain (based on their facial expressions and other non-verbal signals) during discussions of a local campaign encouraging people to forward hate-speech SMS to the police: The entire group initially asserted that they would not report concerns about hate-speech to the authorities. When pressed for an explanation, one female participant in Nakuru shrugged and commented, *“I might send the message to them [the police], but I don’t believe there will be action, normally it doesn’t work that way”*. Participants in this group also dismissed tracking of mobile telephones as ‘fictitious’, with one woman asking *“where will they get the funds to do this? Because Kenya operates on a tight budget”*. This FGD seemed particularly suspicious of the police and formal security forces, but described benefits associated with the increased connectivity to *informal social networks* as an effective mechanism to access support, reduce tensions and increase security.

Interviews were conducted with representatives of several organisations using mobile networks to promote peace and prevent hate-speech during the 2013 elections such as PeaceNet, a coalition of over 500 peacebuilding organisations across Kenya. During an interview conducted with the Chief Executive Officer of PeaceNet, he explained the purpose of the UWIANO project as,

...designed to get information from the public. They can send SMS to 108, which is interfaced with a software programme. The SMS is received in a Situation Room for early warning, aimed to prevent violence. Reports received are analysed, triangulated, verified and second opinions are gathered. Then reports and recommendations are generated for the appropriate response.

When questioned about appropriate responses, this interviewee described, *“police intervention or organized community dialogues in which mediators around the country coordinate dialogues and come up with solutions”*. He explained that the project had received 20,000 SMS from members of the public during the 2010 referendum, containing both pro-peace and violent content.

An interview was also conducted with a Programme Officer in the NSC Secretariat, a partner in the UWIANO project. He explained,

We use a shortcode - 108 - and people can send alerts about incidents of violence that occur. We are getting a lot of messages from people who fear to approach the police. This system enables them to send anonymous information which can then be verified

This verification is essential because the anonymous nature of the platform results in the receipt of occasionally misleading information, according to this interviewee. Working in collaboration with mobile operator Safaricom, he explained, enables the project to “send out bulk SMS to a particular area to clarify rumours and misinformation”. He explained that messages received,

...are sent to the district and provincial Peace Committees on the ground, and to CSOs¹⁴ and the police. If we get hate-speech messages, they go to the NCIC¹⁵. Also IEBC¹⁶ and the police, if the messages we get are about electoral malpractice, they go to them.

These warning and response mechanisms harness mobile telephony to enhance security during the election period, although they are reliant on users’ reporting of misuse. While mobile telephony offers potential benefits in terms of increasing the reporting of crime, the FGD evidence suggests that users in Kenya remain cautious of formal security agencies and may be reluctant to make use of these functions.

5.3.2 Mobile phones, insecurity and crime

The study in Kenya initially intended to examine one specific type of mobile phone crime; the transmission and receipt of hate-speech SMS during election periods. Hate-speech was widely associated with the escalation of violence, as the previous section demonstrates. However, a number of challenges prevented the robust analysis of rates of dissemination and receipt of hate-speech SMS. Instead, the findings reveal deeper ambiguities in the interpretation and perception of mobile phone content, and a range of further crime threats associated with mobile phones.

¹⁴ Civil Society Organisations

¹⁵ National Cohesion and Integration Commission

¹⁶ Independent Electoral and Boundaries Commission

5.3.2.1 Hate-speech

As outlined earlier in this chapter, during the 2007/8 election period mobile phone networks were widely implicated in the dissemination of threats and incitements to violence, and viral hate-speech SMS were associated with outbreaks of physical violence during this period. It was therefore anticipated that study participants would describe widespread receipt of hate-speech messages during both the 2007 and 2013 election periods, and the survey questionnaire aimed to capture these trends to enable comparative analysis of the type of messages received, the origin of these messages and the factors associated with receipt and non-receipt.

Although the participants provided responses to the quantitative survey questions, the data about the receipt of hate speech revealed surprising findings. Reflecting back on their experiences during the 2007 election, survey participants were asked whether they received SMS inciting violence, SMS containing threatening content about their own ethnic group, or SMS containing threatening content about others. Participants who reported non-ownership of a mobile phone in 2007 were excluded from analyses of these responses. Two thirds of the sample reported ownership of a mobile phone in 2007, during the previous election period. In light of the findings of previous studies, it was anticipated that the majority of the mobile-owning participants would report receipt of hate-speech during previous election periods. These responses were intended to provide a robust dataset for analysis. However, of the 185 participants who reported owning a mobile phone during the 2007 election period, over 90% reported not receiving any type of hate-speech SMS during this period. Of study participants who reported receipt of hate-speech, the majority declined to provide any further information about the type, content, or origins of these messages. Less than 1% of recipients of hate-speech in the survey sample provided any information about these messages. These findings are surprising as the data were collected in areas affected by previous election violence, where the viral dissemination of hate-speech was reported to have been widespread, and previous studies report that many mobile phone users were affected (CIPEV, 2008; Goldstein & Rotich, 2008; KNCHR, 2006; Rawlence & Albin-Lackey, 2008).

As a result of the low levels of reporting of hate-speech, the sample was too small to facilitate the planned statistical analysis. However, the findings are analytically valuable as they reveal different findings to those reported in the studies described earlier in this chapter. In order to investigate these findings further, they are therefore triangulated with the FGD and interview data to examine whether;

1. Participants genuinely did not receive hate-speech SMS during the 2007 election;
2. The survey design was inadequate to capture receipt of hate-speech SMS;
3. Participants received hate-speech but were unwilling to discuss these experiences with the survey enumerators.

The interviews conducted with the local survey enumerators are particularly useful to understand these anomalous findings. Triangulating these interview data with the survey findings indicates that, according to the enumerators' interpretation, systematic biases may have informed participant responses. Reflecting on the challenges experienced while administering the questionnaires, administrators commented on participants' reluctance to divulge information about their receipt of hate-speech and speculated that they may not have been candid in their responses to these question. For example, one survey administrator commented,

...about the SMS, I cannot say they were really coming forth with the right information. Some percentage were still not disclosing what is going on, or went on in 2007 mostly...

During a separate interview another local administrator acknowledged that he observed similar reluctance in respondents' body language, suggesting that in particular fieldwork sites (e.g. Naivasha), some respondents paused thoughtfully before answering questions about receiving threatening content through mobile phones,

...people were not so open and most of them were reserved with their answers, but according to their expression when you asked such kind of question, the question to do with 'have they

received threatening SMS' they would, like, hang back a little, they would say "no"...which, that didn't come out so convincing. So, according to my opinion, I think they had or they have received such kind of SMS but they are not so willing to talk about it to strangers...

These comments suggest that selective underreporting may explain the low reported rates of hate-speech among survey participants, and add weight to speculations of under-reporting of hate-speech described by previous studies (IHRB, 2013; Osborn, 2008; Somerville, 2011).

Analysis of the FGD data also indicates that the survey data may not accurately reflect the experiences of study participants. In contrast to the low reported receipt rates detailed in the survey data, seven FGD participants (half of the total number of participants, both male and female) described in detail SMS they had personally received containing false rumours, incitements and threats during the 2007 election period. All fourteen FGD participants confirmed that hate-speech SMS were widely disseminated through mobile networks during 2007, although several (number unrecorded) did not own mobile phones during that period. Three FGD participants in Nakuru described receiving SMS informing them that the government had been overthrown in a coup during the 2007 election period. One participant in this group also described receiving an anonymous SMS informing him that, *"five hundred Kalenjins have been killed, calling on Kikuyus to seek revenge"*. He described feeling *"alarmed"*, later realising that this message was a false rumour inciting violence. One male participant in Nakuru described receiving an SMS stating simply, *"we are coming for you"*, which caused him to feel *"afraid"*. In Naivasha, two FGD participants mentioned receiving SMS threatening violence against themselves and their families on the basis of their ethnicity during the previous election period, although they declined to discuss the content of these messages further. FGD participants appear to have been more forthcoming with information about their receipt of hate-speech than survey participants, perhaps as a result of the more informal, conversational setting and the presence of other group members sharing similar experiences.

Interviewees also described more widespread patterns of hate-speech dissemination than indicated by analysis of the survey data. The Country Director of the *Electoral Institute for Sustainable Democracy in Africa* (EISA) in Nairobi described the dissemination of hate-speech through mobile phone networks during the 2007-8 election period as “*endemic*”, with mobile phones receiving messages, “*like a switchboard*”. He acknowledged personally receiving numerous threatening and insulting messages during the 2007-8 period, although declined to describe their content. The vice-chairman of PeaceNet in Eldoret also revealed that he was a victim of hate-speech during the previous 2007-8 election period. In addition to receiving several hate-speech SMS, this interviewee described one threat transmitted in an anonymous phone call wherein, “*someone called and said ‘we are just outside your gate, we want to come in and kill you’*”. It transpired to be an empty threat, according to this interviewee, designed, “*just to scare me and make me have fear*”. These interview data, coupled with the FGD findings and the speculations of survey administrators, call into question the validity of survey participants’ responses to questions concerning the receipt of hate-speech in 2007.

The interview and FGD data support the argument that survey respondents selectively under-reported their receipt of hate-speech, and it may be speculated that they were influenced by both the format of the survey and the method of administration, and by considerations of risk associated with admitting receipt of content now deemed illegal. Extrapolating from the finding that half of all FGD participants received hate-speech, this informal discussion format may be a more appropriate forum to discuss content perceived as sensitive and potentially risky. It is also possible that the survey design was inadequate to capture these past experiences as it did not include techniques designed to improve participant recall, and this is investigated in depth in Chapter Seven including suggestions for future research. Furthermore, it may be the case that the dissemination of hate-speech was less widespread than previous studies have suggested, although the study findings do not provide evidence for this hypothesis.

Analysis of the survey data on the receipt and origins of hate-speech SMS during in the 2013 election period reveals similar patterns of reporting, but triangulation of the data suggests that these findings may be more reliable than

the patterns of receipt reported for the 2007 election period. Only 2% (n=7) of surveyed mobile phone owners reported receiving threatening SMS in 2013. These responses are unlikely to have been affected by recall bias as the survey was conducted in 2013. Furthermore, all participants who reported receipt of hate-speech provided further narrative information on either the content of these messages, or their feelings upon receipt of them. When analysed in light of the FGD and interview data presented subsequently, it seems likely that the findings about hate-speech receipt in 2013 are more reliable than the findings about hate-speech receipt in 2007.

Six survey participants who reported receiving hate-speech provided qualitative data on the content of the threatening messages, and all seven recipients described their feelings associated with it. Recognising the limited analytic value of these data, and acknowledging that these few responses are unlikely to be representative of a wider population, they are nevertheless the only survey data collected on attitudes to hate-speech SMS. Accordingly, they are presented in full in table 11 below.

Table 11: Threatening SMS reported by Kenya survey respondents in 2013 election period

Content of threatening SMS	Feeling associated with receipt
Vote for a specific leader	Scared remembering what happened in 2007
The election will be rigged	You can't feel positive because they say computer error
To vote in peace	Not to trust anyone
I prefer not to say	Very unsafe
We should vote according to the majority who are here	Very provoked
Dear customer, If you don't vote for Uhuru (Kenyatta) you should vacate Kenya	I felt bad and even switched off my phone for a while
If you support a certain party you will go	Not bad because sender was a drunkard

Inevitably, it is not possible to draw conclusions from such a small sample, particularly as these respondents did not replicate the message content precisely and instead provided summary outlines of the content. These cannot be compared with primary data on hate-speech received in 2007, as study participants did not provide any concrete examples of these. However, compared to the examples of hate-speech in 2007 described in previous studies

(e.g. Goldstein & Rotich, 2008), these messages appear considerably less threatening. Nevertheless, this content was categorised as ‘threatening SMS’ by survey participants. One message advises the recipient, “*to vote in peace*” and appears to have been intended as a pro-peace SMS. Another message indicating that, “*the election will be rigged*”, appears to be an item of gossip rather than a direct threat. The rest of these reported ‘threatening SMS’ encourage recipients to vote, or not vote, for a particular party in the forthcoming election. These represent a departure from the violent threats described by FGD and interview participants in the 2007 election period, and those detailed in previous studies. However, this may be due to participants describing threats received in more neutral language than the original content of the message. Access to the original message was neither requested nor provided, and therefore the original content cannot be verified. Despite this, the survey data suggests that few survey respondents received threatening SMS in 2013, and threats received were more neutral than those reported during previous election periods.

The small quantity of survey data collected on the receipt of hate-speech SMS during both the 2007 and 2013 election periods is insufficient to facilitate the planned comparative or statistical analyses. However, triangulating these data with the qualitative findings illuminates interesting patterns. Analysis of the qualitative interview and FGD data corroborates the survey findings concerning low rates of receipt in 2013, as demonstrated subsequently. Furthermore, these data are useful as they provide several possible explanations for the low rates of receipt and the relatively inoffensive content compared to previous election periods.

During the FGDs, participants were unanimous in asserting that mobile networks were no longer used for the dissemination of hate-speech in 2013. Participants broadly attribute this shift to the increasing use of other communication channels, suggesting that the transmission of hate-speech has not fundamentally declined, but rather the method of transmission has changed. For example, FGD participants described leaflet campaigns, word-of-mouth, and social media as popular mechanisms for the dissemination of threats and other anti-social political content. A FGD participant in Naivasha explained, “*leaflet campaigns are now safer ways to spread hate-speech. They are*

anonymous. There are some here in Naivasha". Others in the group concurred with this statement, nodding and commenting that leaflets are "*more anonymous*" than mobile phones, and therefore more suitable for use by "*troublemakers*". This theme also emerged in the survey data, although questions did not aim to elicit this information. Examining responses to a question about attitudes to the monitoring of SMS content, nine survey participants specifically state that monitoring is likely to be ineffective at preventing hate-speech, as a consequence of the shift to more anonymous communication platforms such as leaflet campaigns. For example, they stated, "*it will be a waste of time because mostly people use leaflets to spread threatening SMS and incitements*" and "*most criminal offenders or inciting messages are arranged and spread using leaflets but not SMS via the phone*".

Recognition of this shift also emerged during the interviews. For example, the Country Director of EISA stated, "*now, it's the social media, Twitter, Facebook, that should be watched. The tone is still very sharp. Not in SMS though*".

Describing changes in the communication of hate-speech since 2007, a local peace activist interviewed in Eldoret explained,

SMS has gone down. After the registration process, people stopped sending messages to the SMS lines and now they are using social media, with pseudonyms, instead. You just click on 'share' and it spreads rapidly to everyone. If you're not on social media, you're left behind...

The regional Vice-Chairman of Peacenet, also interviewed in Eldoret, also suggested that hate-speech was likely to shift onto social media platforms, but qualified this by stating, "*Twitter and Facebook are not as effective as mobile phones, as not every Kenyan has access to these*". This is reflected in the difference between FGD and survey responses, which focus on the use of leaflet campaigns, and the interviewees' concerns regarding the use of online media. Regardless of the replacement mechanisms, the shift of hate-speech away from mobile networks to other communication channels was widely reported by study participants. By extension, this indicates hate-speech was initially more prevalent in mobile networks than the quantitative survey data shows, lending support to the theory that the low reported receipt rates reflect

under-reporting by survey participants. Whatever the reasons, this under-reporting presents a challenge for the analysis of the survey data. With low responses to key survey questions, the survey data were insufficient to examine patterns in the receipt of hate-speech as initially intended. However, triangulation of the qualitative and quantitative data illuminates possible reasons for these findings, and reveals interesting ambiguities and interpretations of the changing patterns of use of mobile phones for the transmission of threatening content.

In addition to selective under-reporting in past elections and low rates of receipt in 2013, ambiguity associated with defining and classifying hate-speech may also contribute to the low rates of hate-speech reported by survey participants. The qualitative responses to survey questions about the content of hate-speech SMS presented in table 11 hints at these ambiguities, which are further illuminated by analysis of the FGD data. Despite widespread acknowledgment of the prevalence of hate-speech during previous election periods, FGD participants remained divided about precisely what constituted hate-speech. To examine these differences of opinion, participants in both groups were asked to develop and discuss their definitions of hate-speech, and ultimately reach agreement on a specific definition. The results of this exercise were illuminating. In Nakuru, participants were ultimately unable to reach agreement on a comprehensive definition of the term. Differences emerged in particular between older and younger participants. The three older group members comprised a head teacher, a church leader, and a professional driver. These participants asserted that jokes and humorous political insults constitute hate-speech, and furthermore that such content is inappropriate for communication through mobile phones. The four younger group members comprised two students, a shop attendant and radio presenter. These participants refused to define humorous messages as hate-speech, despite prompting from the church leader in particular. The participant who self-identified as a radio presenter stated, "*making fun of politicians is not hate speech, in fact it is good... but when you go to the tribes it becomes personal*". All participants in this group eventually agreed that hate-speech is political content that "*crosses the line*", although the 'line' was not precisely delineated and dissent was evident within

the group. One participant, seeming somewhat exasperated with the topic, explained,

...there was a warning issued by the government (on TV) about messages, about using anything that could make you feel bad about your candidate, even if it's comical. Because what could be funny to you could not be to someone else. It could have a hidden message.

This theme of a 'hidden message' permeates the qualitative data, as participants describe layers of meaning that may communicate different messages according to the interpretation of the recipient. Examining next the FGD data from Naivasha, participants expressed more uniform opinions than the Nakuru group in demarcating the boundaries of acceptable content for SMS. Nevertheless, the same interpretive component was at the core of their definition. All participants agreed that messages must be discriminatory to be considered hate-speech. They broadly affirmed (nodding, making noises indicating agreement) a comment made by one participant that,

Hate speech is any message that can cause negative emotion to different people. It may not be necessarily tribe... it could be the rich, the poor, working class, jobless... it always depends on the receiver.

This participant was identified as a respected community leader, the oldest group member, who led the group to agreement on the definition of hate-speech as, "*discriminative information alienating other people*". It is plausible that other group members felt compelled to agree with his definition despite personal reservations, or perhaps that his opinion influenced their attitudes towards the definition of the concept. However, the definition agreed upon by FGD participants in Naivasha aligns with comments made in the Nakuru group, emphasising that the *interpretation* rather than the *content* contributes to the categorisation of a particular message as hate-speech. One participant in Naivasha explained, "*every message you send is hate-speech if you send it to the wrong receiver*".

In Naivasha, participants competed to invent humorous examples of hate speech, such as "*if you told someone you love them and maybe they don't want*

your love then it's hate-speech", and "*our president' (using gestures to indicate ownership) can be termed as a hate-speech because you can be alienating other people if it is sent only to your tribe*". Although light-hearted, these comments reveal the underlying tensions between perceptions of particular SMS content as acceptable or unacceptable, legitimate self-expression and anti-social behaviour. The data also suggests that the interpretation of messages received is critically informed by contextual cues and the interpersonal relationships between sender and recipient.

The interview and FGD data reveal ambiguities in the classification of SMS as hate-speech and those considered threatening, anti-social and humorous by recipients. The phrase '*hidden message*' or '*hidden meaning*' recurred during FGDs discussions about hate-speech, revealing contradictions between the apparent content of a message and the underlying meaning interpreted by recipients. This lack of clarity may have been a further contributing factor to the low rates of reporting of hate-speech by survey respondents, as the survey may have been too 'blunt' an instrument to capture these ambiguous messages. Survey questions specifically asked about *inciting or threatening* SMS: those containing *hidden meanings* may have been interpreted differently by recipients and therefore gone unreported.

The interview data correspond with the findings of the FGD discussions in acknowledging the changing nature of hate-speech transmitted through mobile phone networks, and the increasing indirect language used. For example, the Country Director of the *Electoral Institute for Sustainable Democracy in Africa* (EISA) explained that hate-speech messages are frequently sent with the intention, "*to damage the character of candidates*", describing a recent comment seen on social media as an example, "*how can you vote for an uncircumcised candidate?*" noting, "*in some tribes this is not a real man*". Similarly, a community leader participating in the Naivasha FGD described discriminatory content against candidates as hate-speech, such as a hypothetical SMS asserting, "*a woman cannot lead us*". A representative of the National Steering Committee on Peacebuilding and Conflict interviewed also described hate-speech as increasingly indirect. He described a shift in the content of SMS inciting violence,

...from hate-speech to more personal information, rumours. They trigger attacks, like when a girl was abducted and murdered, and then people used it to manipulate ethnic hatred...

This broad shift, and associated reduction in the transmission of anti-social content through mobile phone networks, was widely recognised by interviewees and FGD participants, and may also be inferred from analysis of the survey findings. The transmission of threatening and anti-social content was found to have reduced, with messages containing 'hidden meanings' rather than explicit threats, in the period between the 2007 and 2013 elections.

The transmission of humorous SMS was also anecdotally reported to be widespread during the 2013 election period. During the pilot study and initial interviews, an interviewee and several survey administrators suggested including a question about the receipt of humorous messages and funny political content during the 2013 election period. Survey administrators in particular indicated that these messages were widespread, and informally described sharing jokes and political satire through SMS. The survey was therefore amended to include a question asking, *have you received any SMS containing funny political content around the forthcoming election?* However, the quantitative survey data did not support these expectations, with less than ten percent of mobile phone owners in the sample (n=28) reporting receipt of political humour by SMS. The majority of these (24 of 28 recipients) provided qualitative data about the content of these humorous messages, and about their feelings on receipt of them. These responses were coded into four categories according to their content. Respondents reported feeling amused, insecure, reflective, or neutral in response to receipt of messages they categorised as 'funny'.

These qualitative responses are indicative of the subjectivity with which SMS are interpreted. Only half of the recipients reported feelings of amusement on receipt of messages which they classified as 'funny', while 12% reported feeling reflective and 17% reported neutral emotional responses. Around a fifth (21%) of recipients described feelings of insecurity or psychological harm associated with their receipt, such as feeling, "*unsafe*", "*very embarrassed*" and "*isolated*

from all Kenyans". Although the sample size is too small to draw generalizable conclusions, the association of feelings of insecurity with the receipt of SMS classified as 'funny' provides further corroboration for the hypothesis that users' interpretation of meaning is more complex than a simple analysis of the content. Furthermore, it supports the proposal that categorical slippage around the classification of hate-speech hinders analyses of this topic. While survey participants report higher receipt of humorous SMS than threatening ones, their emotional responses to 'funny' SMS indicate that they may have actually categorised offensive content as humour. The feelings of insecurity, embarrassment and isolation associated with 'funny' SMS reported by one fifth of recipients demonstrates this categorical slippage, and it is interesting therefore that participants were more willing to discuss offensive SMS with a humorous component than offensive SMS purely containing threats.

Study participants expressed a range of opinions about the transmission of humorous content that could be interpreted as offensive, reflected for example in the definitions of hate-speech developed during the FGDs. Considering hate-speech to be content that 'crosses the line' or 'alienates people', this interpretive component may have emerged as a consequence of the experience of political violence associated with these types of communications, which reports suggest affected as many as one third of all Kenyans (Dercon and Gutiérrez-Romero, 2003). During an interview with the country director of EISA, for example, this interviewee indicated that, "*people initially found them (some hate-speech messages) humorous in 2007. The reality check was the post-election violence*". This shift in perceptions may reflect the increasing acknowledgement of the risks associated with mobile communications for the transmission of potentially sensitive content, and the subsequent caution with which they are approached by users.

Beyond the content of the message and the interpretation of the recipient, another key consideration in the interpretation of the meaning and intentionality behind particular SMS appears to be the *source* of the message. Survey participants who reported receiving hate-speech SMS were asked about the source of these messages. However, few participants reported receipt of hate-speech in general, and even fewer provided any additional information about the source. Again, this may reflect participants' unwillingness to discuss

sensitive messages, or it may reflect poor recall of SMS received several years previously. Accordingly, these data have limited analytical value, and are presented here to demonstrate this point rather than as a reliable source of data on the sources of threat. Table 12 below details the reported sources of threatening SMS during the 2007 election period. As rates of reporting were low, participant numbers are reported rather than percentages in this table.

Table 12: Sources of violent and threatening messages during 2007 according to survey respondents in Kenya

	Source of SMS						
	Close Friends and family	Friends	Political Party	NGO	Community Leader	Prefer not to say	Other
SMS inciting violence	0	3	0	0	0	9	13
Threatening SMS	1	1	1	1	0	5	5
SMS threatening others	2	5	0	0	0	10	0
Total	3	9	1	1	0	24	18

As table 12 shows, the majority of survey participants who reported receipt of one or more types of hate-speech SMS during 2007 did not provide information about the source the message. Three quarters of participants who answered this question (n=42) were recorded as ‘prefer not to say’ or ‘other’. Responses recorded as ‘other’ either did not provide further information, or attributed the message to an unknown sender. Twelve recipients attributed messages to the categories ‘friends’ or ‘close friends and family’, indicating that they may have been sent as informative or seeking reassurance, rather than intended as a threat. Furthermore, these responses undermine the credibility of the remaining data, as they suggest that the question may have been poorly worded or respondents may have misunderstood. It seems unlikely that threatening hate-speech SMS would originate from friends and family, and therefore participants may have been referring to the receipt of warnings about threats, rather than threatening message.

Examining the FGD data further illuminates these issues. The majority of FGD participants expressed uncertainty about the source of messages interpreted as hate-speech. Analysing these data suggests that when the originator of the

message is known, messages are generally not regarded as threatening. For example, one participant in Naivasha explained, “*no [I have not received hate-speech by SMS], but it depends on the source. I have received something but it came from a friend so it is a joke*”. Here it seems that the participant has chosen to categorise the message as ‘safe’ precisely because it originates from a friend; while acknowledging that if it originated from an alternative source it could be regarded as hate-speech. Similarly, two FGD participants in Naivasha described receiving SMS containing rumours forwarded to them by friends seeking verification of their content; these were not interpreted as threatening. Another participant in the same group then described receiving an SMS warning him to vacate his property as armed men were coming that night to attack. He was unsure whether this message originated from a friend as a warning, or from an enemy as a genuine threat or as a rumour designed to instil fear. In this particular case, the uncertainty around the origin of the message increases the likelihood of it being regarded as a genuine threat.

These ambiguities are likely to contribute to study participants’ reluctance to discuss their receipt of hate-speech messages, for fear of implicating particular senders. The lack of clarity around what constitutes hate-speech, combined with categorical slippage between humour, rumour, and hate-speech also increase the challenges associated with the study of hate-speech. Surveys are therefore likely to be inadequate tools for the collection of data on hate-speech, as mobile phone users’ experiences of hate-speech are subject to layers of interpretation according to the perceived intention of the sender.

When the sender of threatening or anti-social SMS is unknown, the data suggests that recipients are more likely to interpret the message as hate-speech. In Naivasha, participants expressed suspicion that threatening SMS originate from mischievous incarcerated offenders in local prisons. For example, two FGD participants in Naivasha who described receiving anonymous threatening SMS in 2007 believed these originated from prisoners in the local jail. Other participants in this group expressed both verbal and non-verbal support for this assumption, nodding and discussing the widespread use of mobile phones by criminals for coordinating and committing crimes during periods of incarceration. One participant stated, “*Inmates from prison would call you and demand money*”. Like the FGD participants in Naivasha, the vice-

chairman of Peacenet in Eldoret also attributed threatening SMS to convicted criminals using mobile phones inside a nearby prison, commenting,

Prisoners are using unregistered SIMs to send messages from inside prisons. I was a victim. Someone called and said we are just outside your gate, we want to come in and kill you.

These findings suggest that mobile phones are perceived to enable prisoners to overcome their confinement and remotely access victims. The use of mobile phones by incarcerated prisoners reveals a further ambiguity associated with the virtual connectivity of mobile telephony. These tools render physical boundaries permeable, with prisoners able to overcome their physical confinement and target their victims remotely through mobile phone channels.

5.3.2.2 New crime opportunities

In addition to the dissemination of threatening and offensive content widely termed 'hate-speech', the research findings reveal several further security threats associated with mobile telephony in Kenya. These threats emerged throughout the fieldwork period, as the relationship between communications and social disorder was revealed to extend beyond the dissemination of hate-speech. Accordingly, this section draws primarily on the FGD data, and presents exploratory findings from the primary data.

A key security threat identified by study participants was SMS scams, which emerged without prompting during both FGDs and proved to be of great interest to participants. All but one FGD participant in both groups described receiving scam messages, and the majority of recipients attributed these messages to unknown senders. Although they reported receiving fraudulent scam SMS, none of the FGD participants reported falling victim to mobile-perpetrated scams. Three participants in Naivasha mentioned rural family members being tricked by mobile phone fraudsters.

FGD participants described a range of types of scam SMS. These include generalised or generic content, such as SMS that falsely informed recipients that they had won prizes in competitions to entice them to transfer money to collect their prize. Other participants described personalised scams, such as the

receipt of SMS purporting to originate from family members and requesting urgent assistance. For example, one FGD participant in Nakuru explained,

People message and say “I’ve been arrested. Send money”, or you are told you’ve won the lottery and must send some money to collect your winnings...

Another participant in Nakuru described a popular scam in which the victim receives a message informing them of a transaction made in error, and requesting the return of the funds. He stated,

...they would say “Mpesa has sent money into your account”, but it is fake money, and “you are to send it to this person”. When they get the money they destroy the SIM card.

Many of the scams described by participants were reliant on m-money services to facilitate financial transfers. In addition to the virtual platform of mobile communications enabling users to assume false identities, m-money services also facilitate the transmission of instantaneous financial transfers between these disconnected users, introducing new opportunities for the perpetration of fraud and scams.

All of the scams reported utilised the anonymity of mobile networks to assert false identities; whether purporting to be credible formal organisations such as mobile network providers or government agencies, or informal connections such as family members. The majority of scam messages described by study participants were generic in nature and did not include personal information targeting a particular victim, such as those describing winning prizes or transaction errors to encourage recipients to make financial transfers to the originator of the message. Some messages were reported to be personalised and targeted specific individuals, for example those claiming to originate from a named family members.

Participants described mobile phones in terms of creating new opportunities for crime and anti-social behaviour. For example, an FGD participant in Naivasha explained,

...mobiles also bring some mischievousness. Someone calls you and says they are arrested by police, can you send me

some money... it's a game.... they are conning you over the phone... so in that way, crime rates have increased. But now that they are registered it's easier to trace...

The notion that mobile phones encourage 'mischief' proved to be a recurring theme for FGD participants. FGD participants described how mobile phones, "*enlarge your territory of knowing people*", and bring people "*into one village*". However, they also expressed unease about this increasingly interconnected network of invisible users, and particularly around the verification of identities. Participants repeatedly asserted that criminals destroy the SIM card after the completion of successful scams, as though this physical act severs the connection between victim and perpetrator and permanently conceals the identity of the offender.

Having identified a range of crime threats associated with mobile phones, the subsequent section presents the findings relating to the *prevention* of crime facilitated through mobile phone networks in Kenya.

5.3.3 The prevention of mobile phone crime

The findings demonstrate that users perceive the crime threats associated with mobile phones to have fundamentally changed as a result of a number of preventative strategies. These findings emerged during the survey, FGD and interviews, in which study participants expressed support for preventative strategies implemented, while also describing ways in which offenders are able to adapt to circumvent or bypass preventative measures.

5.3.3.1 Peace SMS and the de-escalation of violence

As this study was initially designed to investigate the dissemination of hate-speech SMS, questions about the receipt and interpretation of peace SMS were included in the survey instrument. According to these data, around half of survey participants reported receiving SMS promoting peace around the 2013 election (n=128). These participants were asked to describe their feelings about the receipt of peace SMS, and the qualitative responses were subsequently coded into 'positive', 'negative', 'neutral' and 'ambivalent' categories (see figure 14).

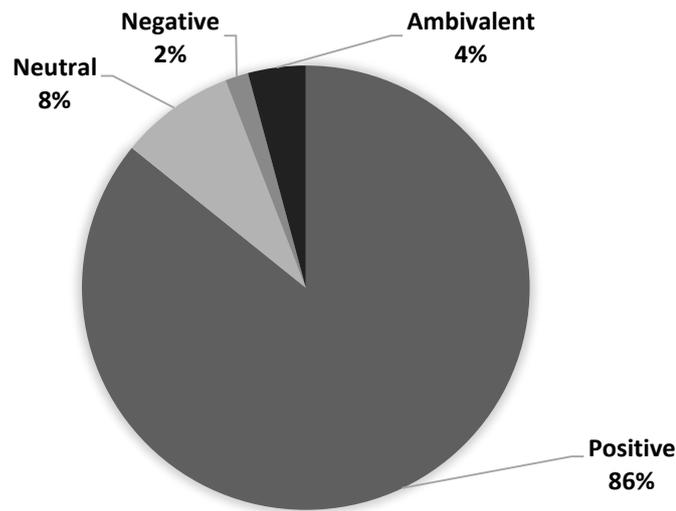


Figure 14: Feelings associated with receipt of pro-peace SMS according to survey respondents in Kenya

As figure 14 demonstrates, the majority of peace SMS recipients described positive emotional responses such as feeling “*calm*”, “*patriotic*” and “*secure*”. Neutral feelings associated with the receipt of peace SMS included, “*nothing*” and “*just ok*”, while ambivalent feelings were, for example, “*a little bit safe – though fear of unknown is still in me about the coming election*”. Only two recipients reported negative feelings associated with their receipt of pro-peace SMS. One commented, “*it made me feel that I don’t belong here*” and the other explained, “*I felt bad because they kept sending it many times and I already know we should be peaceful*”. These findings suggest that the majority of recipients of peace SMS felt more secure as a consequence of receiving the messages. Adding interpretive depth to these findings, FGD participants were also asked to discuss how they felt about receiving pro-peace SMS, and analysis of these discussions provides more detailed interpretation of their impact.

During the FGDs, participants both described peace SMS as contributing to feelings of security, and also expressed scepticism about their tangible impact on conditions of peace and violence. For example, in Nakuru one participant commented that he felt “*relieved*” when he received peace SMS, to which female participant responded that peace SMS, “*...will contribute to calming the tensions*” and “*remind people to be mindful*”. Several other members of this FGD expressed scepticism with body language and facial expressions, and it could be inferred from non-verbal cues that they disagreed with this

interpretation of the potential impact of peaceSMS. A male respondent countered that peace SMS are, *“just like spam”*, predicting that they are unlikely to have any impact. Another respondent commented that their impact depends on the origin of the message, and whether or not they are sent by *“legitimate bodies”*. This topic elicited considerable debate and disagreement among FGD participants, with some defending the value of peace SMS for helping mobile phone users to feel more secure, and others describing them as having no tangible effect on insecurity. FGD participants broadly dismissed suggestions that SMS peace campaigns could reduce violence. *“Positive impact,”* one participant in Naivasha stated to general agreement, *“is achieved by sensitising people through institutions like church and schools, they are the legitimating bodies”*. Another participant in the group concurred, commenting, *“Peace programmes, particularly through churches, have been most effective to sensitise people”*. FGD participants also discussed alternative peace initiatives they considered to be effective in Nakuru, commenting that, *“they [peace initiatives] are effective... we normally have meetings every week and we talk about peace and most of the organisations come to talk... even the youths are involved in the activity of peace”*. Participants in this group expressed the opinion that face-to-face contact was essential for building trust and that mobile telephony is an ineffective mechanism to catalyse behavioural change, unless messages originate from trusted sources such as religious leaders. This is consonant with the findings of previous studies, such as Rafael’s (2003) argument that mobile phones were an effective catalyst of change in the Philippines only when calls for collective action were supported by respected religious leaders. FGD participants were also adamant that campaigns implemented through churches were likely to have the most impact on peace, and were also unanimous in stating that religious leaders are the most trusted source of information in local communities. Participants were able to describe two recent peace initiatives in the local sports stadium and mentioned ‘many’ on TV that they considered to be more effective than mobile phone campaigns. Interestingly, religious leaders were not mentioned in any of the interviews with organisations using mobile phones for peace and violence prevention, and it is notable that none of the organisations researched formally encourage religious leaders to participate in their activities.

5.2.2.2 SIM Registration

As noted earlier, SIM card registration was implemented in Kenya on 31st December 2012 to reduce the misuse of mobile networks. During FGDs and interviews, SIM registration emerged as a critical mechanism through which the security threats associated with mobile telephony has been effectively mitigated. The Country Director of the EISA associated SIM registration with peaceful elections in 2013, stating, “*the registration of SIM cards has been very successful in preventing recurrence of violence*”. The vice-chairman of Peacenet in Eldoret also attributed the reduction in threats and hate-speech to SIM registration commenting, “*since registration, many SIMS have been switched off, by Safaricom for example. The government took good steps*”. In Eldoret, a local peace activist interviewed also attributed the shift in hate-speech communication from mobile networks to online social media to SIM registration, commenting, “*after the registration process, people stopped sending messages to the SMS lines and now they are using social media, with pseudonyms, instead*”. During the interviews with high-level stakeholders, SIM registration was widely described as an effective mechanism through which hate-speech and the organisation of violence using mobile phones have been mitigated in Kenya. However, as interviews were primarily conducted with representatives of organisations seeking to reduce the dissemination of hate-speech during the 2013 election period, it is perhaps unsurprising that these interviewees expressed support for SIM registration. It is more surprising that support for SIM registration was also unanimous among FGD participants. FGD participants were not asked specifically to discuss their attitudes to SIM registration, but nevertheless it emerged frequently. For example, in Nakuru a female FGD participant commented, “*It’s because of this [SIM registration] that people are not sending hate speech this election*”. A participant in Naivasha also attributed reduced misuse of mobile networks to SIM registration asserting, “*...now phones are all registered it is easy to track them, mobile crime has reduced.*” A participant in Naivasha affirmed, “*I have not had bad messages since registration, you can be prosecuted [for sending hate-speech] so people are careful now*”. One participant in Naivasha attributed this reduction directly to the Communications Commission of Kenya (the government body responsible for the prevention of hate-speech), asserting, “*CCK has reduced drastically the number of hate messages, and brought a lot more care*”. This motif of mobile

phone users 'taking care' to transmit appropriate content in their communications recurred during both FGDs and several interviews. Almost half of the FGD participants (five in Naivasha and one in Nakuru of a total of fourteen participants) described mobile users as more 'careful' following SIM registration. These findings suggest that study participants widely support the SIM registration process, and furthermore that they perceive it to be an effective disincentive for the transmission of anti-social content through mobile phone networks. Specifically, they attribute its effectiveness to reducing the anonymity of mobile users, which is deemed to encourage users to behave in a responsible manner.

Based on widespread media reporting in Kenya, it is popularly believed that SIM registration is associated with the monitoring of individual SMS to detect and punish users who send inappropriate content, a view expressed by participants in FGDs, interviews and during the survey. Perceptions of SMS monitoring were examined through each of the data collection methods. During the surveys, both open and closed questions were used to gauge respondents' attitudes towards the monitoring of mobile networks.

Survey participants were asked, *do you think the government should monitor SMS content?* Three quarters of the survey sample (n=223) responded that they believed the government should monitor SMS content, while one fifth (n=57) responded that the government should not. The remainder (n=17) were recorded as non-respondents to this question. Survey participants were asked to substantiate their answers with an open question asking for further information about their response. They provided a range of reasons both in support of, and against, monitoring. These were coded into nine categories, with each response coded according to the main reason provided. Categories and examples of messages are provided in table 13, and the frequency of responses is provided in figure 15.

Table 13: Reasons for attitudes to SMS monitoring provided by Kenya survey sample

Attitude	Category	Examples
Pro-monitoring	General Security	<i>For security reasons To avoid election violence</i>
	Prevention of Hate-Speech	<i>To prevent spread of hate speech through SMS To prevent people from passing SMS that are inciting and cause havoc</i>
	Identification of Perpetrators	<i>Those sending inciting messages and threats can be easily spotted So that they can catch conmen and people who incite violence through SMS</i>
	Protection of Victims	<i>To protect citizens from violence To see those being threatened to assist them</i>
Neutral	Neutral	<i>They can if they think it's ok</i>
Anti-Monitoring	Privacy /confidentiality	<i>Privacy is important Private SMS sent to loved ones, the government should have no business in</i>
	Rights/Freedom	<i>Interference in people's rights Freedom of expression is essential</i>
	Monitoring is Ineffective	<i>It will be a waste of time because mostly people use leaflets to spread threatening incitements People are no longer using SMS</i>

Of survey participants who expressed support for monitoring, around half (n=107) cited the prevention of hate-speech as the reason. General security and the identification of perpetrators of crime were also popular reasons given by survey respondents.

Privacy concerns was the most frequent reason provided by respondents who did not believe that the government should monitor SMS use, although it is interesting to note that some respondents premised their objections on the pragmatic assumption that monitoring is likely to be ineffective. Most respondents who cited the ineffectiveness of monitoring as a reason for their response elaborated their comments by asserting that hate-speech has shifted away from mobile channels.

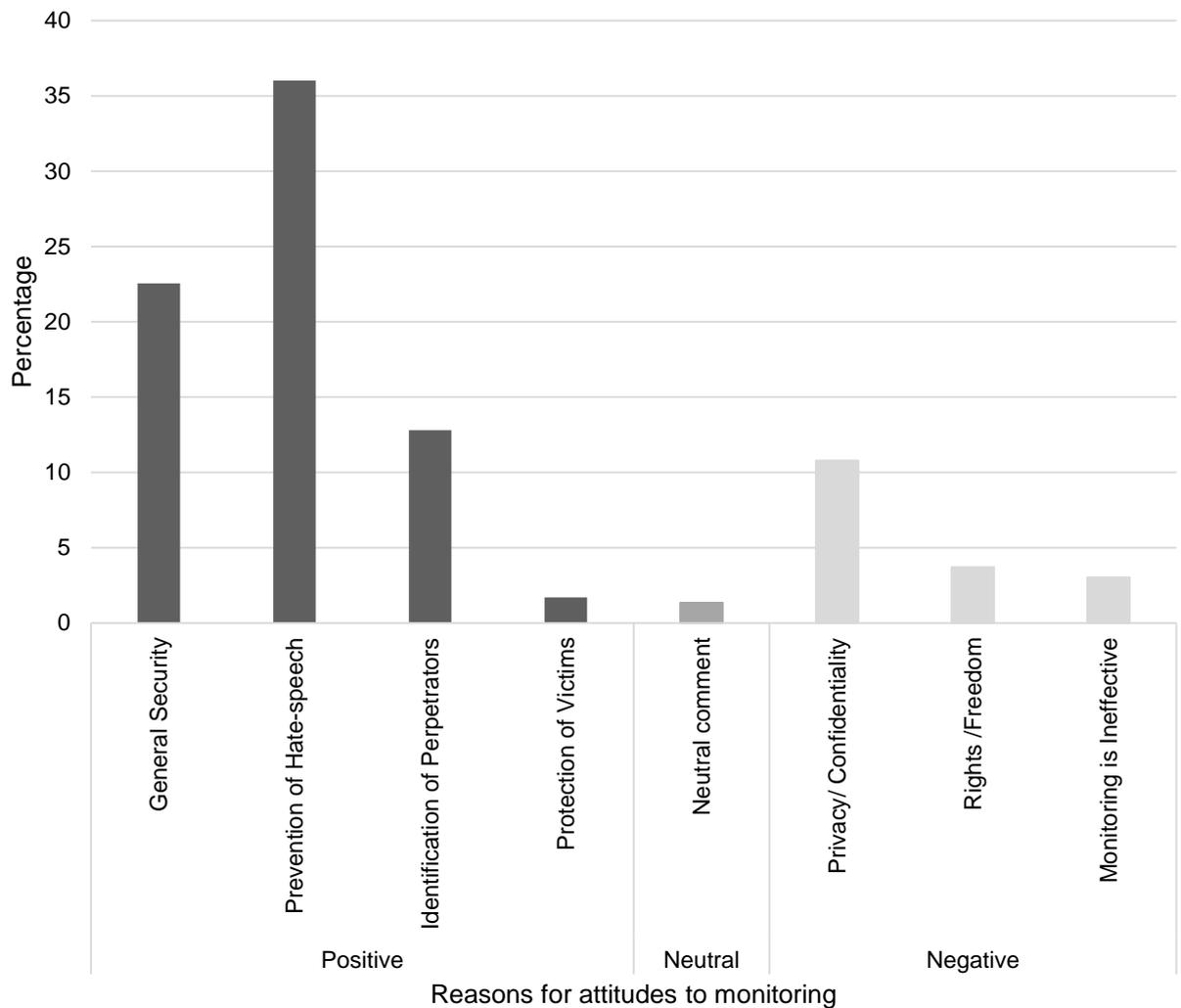


Figure 15: Reasons provided by study participants in Kenya for supporting or opposing SMS monitoring

Further details on participants' attitudes to monitoring were elicited with survey questions asking whether they were personally concerned about being monitored, and whether this affected their mobile phone use habits. More survey respondents stated that they were personally concerned than objected to monitoring in general, suggesting that these concerns were not sufficiently serious to cause them to object to monitoring. Of mobile users who responded to this question, (n=276), around one third (n=79) expressed personal concern, compared to around one fifth (n=52) who stated that they did not support monitoring. Participants' reasons for being concerned, or not being concerned, about monitoring were coded and categorised according to the main reason

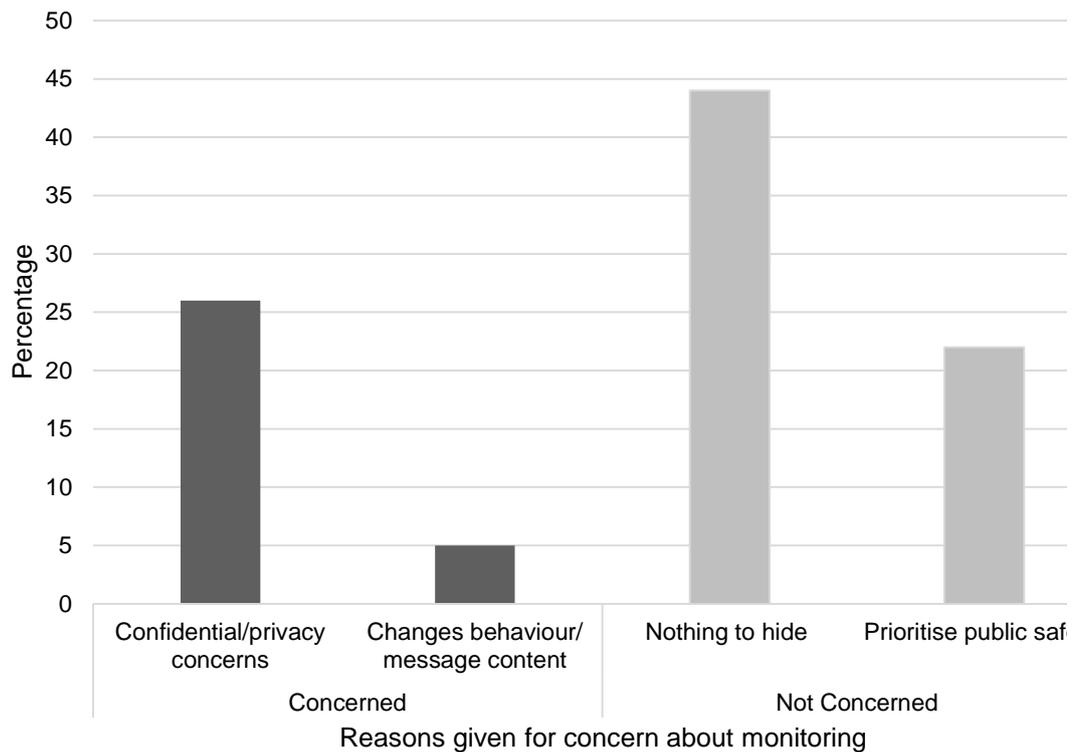


Figure 16: Reasons provided by study participants in Kenya for being concerned or unconcerned about SMS monitoring

provided, as shown in figure 16. Although a wide range of justifications were anticipated, in practice all participant responses could be coded into four core categories.

As figure 16 shows, the most popular response provided by participants was that they had no reason for concern because their mobile phone use was legitimate. Examples of responses coded as ‘nothing to hide’ include, *“I don’t participate in dirty political hate speech”, “I only send good things to people”,* or indications that their SMS messages are *“clean”*. The other reason for participants reporting a lack of concern about monitoring was the attribution of priority to public safety over personal privacy. These participants made comments such as, *“my country will be peaceful, that is what matters”, “it’s just a good way to improve the security”,* and *“it’s the government and they are protecting me”*.

One third of the survey participants reported being concerned about monitoring, and as noted previously this does not necessarily result in a lack of support for

monitoring. These participants provided reasons that were coded into two core categories; privacy concerns and pragmatic issues associated with changing behaviour. Participants expressing privacy concerns stated, for example, *“it will interfere with my privacy”* and *“I am entitled to my privacy”*. Participants who described concerns around behavioural change provided responses such as, *“I cannot discuss anything private via the text message”*, *“it makes me cautious of what messages I should send”*, and *“I have to be careful now on what I say since we have registered our phones”*. Open responses to this question therefore illuminate the contradictions described previously concerning the ‘hidden meaning’ within messages. Users expressed concern about the interpretation of messages that could be considered as hate-speech but were not intended as such by the sender, and originate from trusted, credible sources. For example, one survey respondent commented, *“I receive many messages from my friends including bad messages. I think they can take it wrong”*. The findings suggest that the lack of clarity over definition of hate-speech, in combination with the contextual interpretation of content received according to interpretations of the motivations of the sender, have altered the communication habits of individual users.

FGD participants in Kenya also expressed little concern about the privacy implications of mobile phone surveillance, and widely reported valuing public security and the maintenance of order over personal privacy. Clear distinctions were identified between the personal and collective implications of monitoring during both FGD discussions. One participant in Nakuru stated, *“being monitored is not good for me, but it is good for all of us”* and another in Naivasha commented, *“it is an infringement of rights if it doesn't reach them [the intended recipient] but we are just being monitored without the person who is the sender being accused of anything so in that way their rights aren't being affected because we aren't being accused”*. The majority of both FGD and survey participants expressed the opinion that passive monitoring is not a threat to innocent users.

During the survey, participants were specifically asked if monitoring affects their mobile phone use habits. One fifth of respondents (n=58) reported altering their mobile phone use as a result of expectations of monitoring, commenting for example, *“I don't call or text freely”* and, *“I am conscious of what I send”*. This

constitutes around half of respondents who previously described concern about monitoring, and one tenth of those who stated they were not concerned about monitoring. The survey data suggests that regardless of the reality of SMS monitoring in Kenya, *expectations* of SMS surveillance affect user behaviour. It also indicates that, at least among the survey sample, support for SMS monitoring is widespread, despite recognition that it affects users' communication habits.

FGD participants in both Naivasha and Nakuru also discussed the ways in which expectations of monitoring affect their mobile phone use, describing altering their behaviours to ensure that sensitive information was not sent over mobile phone channels. One politically active male FGD participant in Naivasha explained, "*The regulation has affected how you communicate with fellow party members – we don't know exactly what constitutes hate speech*". A community leader in Naivasha also described how the legislation affected his political engagement with other party activists, commenting, "*...we now communicate directly, we meet up to mobilise and communicate.*" The FGD participants in Nakuru were less open, describing broad behavioural change among the general public rather than discussing their own behaviour. None of the participants discussed their political communication habits, making general statements instead. For example, one FGD participant commented, "*...people find new ways [to communicate]. If it's a sensitive message, they don't send it through the mobile phone anymore*". In 2007, he continued, "*everyone was free to say what they wanted on radio, TV and SMS. Now everyone is preaching peace, so it has restricted political opinion to face-to-face communication*".

Interestingly, respondents in both FGDs expressed opinions that the current controls over mobile phones are insufficient to prevent security threats associated with mobile networks. In Nakuru, three participants defended the proposition made by one group member that mobile operators should be empowered to block the transmission of hate-speech messages in order to prevent incitements and hate-speech from contributing to violent outcomes. Similarly in Naivasha, a FGD participant explained,

Even though they are being monitored, at the end of the day the message is still being received... the message still will

reach the destination... it just confirms SMS are sent and received, if the SMS could be stopped from being delivered, then it would be better.

Other participants in Naivasha concurred, with one commenting “*they should block it [hate speech], not just monitor it*”, and another asserting, “*...these [mobile phone] companies can block the hate speech from reaching its destination*”.

This theme of shifting sensitive communications to alternative channels also emerged during the interviews. During one interview, the Country Director of the *Electoral Institute for Sustainable Democracy in Africa* described the deterrence effect of SIM registration and the monitoring of mobile networks, commenting that it effectively encourages users to adapt their behaviour as,

The leading network providers have software that can trace hate-speech. It has a deterrence effect... People are aware they are being watched. It was not a crime in 2007, so they were not recorded then.

During an interview with a local peace activist and journalist in Eldoret, the interviewee commented,

Monitoring is bringing about sneaky behaviours. People are meeting in person in hotel rooms and late at night to discuss strategies, for example for expelling particular communities. As a journalist, this is what I am hearing.

According to this interviewee, while monitoring is effective at reducing hate-speech through mobile networks, it does not address deeper issues and therefore encourages people to conceal anti-social behaviour, rather than effectively preventing it. For example, he notes,

Violence is starting in Eldoret, but the only evidence is now verbal. People are marking the houses of certain tribes, people are being told to leave certain areas, and leaflets are being distributed warning people to leave; if they don't vote for particular parties they must vacate. But no one will submit the leaflets [to the police], no one will give this evidence.

Interviewees identified both the deterrence effect, and the displacement of hate-speech onto other, more anonymous platforms, as side effects of perceived SMS monitoring. These themes are revisited in the Chapter Seven.

5.3.3.3 Prosecution and deterrence

The FGDs illuminate an additional factor mitigating the misuse of mobile networks, and potentially affecting the behaviour of mobile users. This concerns the widespread reporting of the use of mobile phone data as evidence in criminal trials. FGD participants in Naivasha described the high-profile prosecutions of people accused of spreading hate-speech as credible evidence that practices of SMS monitoring are widespread. For example, one participant commented, *“Three people have been arrested for spreading hate speech, which confirms that they are monitoring us”* and another noted, *“using mobile phones to send hate messages is reduced because it is being monitored”*. Others in the group expressed non-verbal agreement with this, and similar opinions were expressed by the high-level interviewees. During an interview with a Programme Officer in the NSC Secretariat, the interviewee mentioned this deterrence effect, describing the indictment of several (unspecified) political figures as *“the elephant in the room”*. He commented,

It’s a great lesson to politicians that they will be held responsible for their actions. Regardless of the outcome, it’s a lesson that sinks in with every citizen in this country: You will be held responsible for your actions.

The Country Director of the EISA also notes that, *“there have been abuses brought to the high courts which use evidence from SMS, like tracking, to prosecute”*. This indicates that awareness is increasing of the risks of utilising mobile phone communications for the commission and organisation of crime. With increasing awareness of these risks, public perceptions suggests that the misuse of mobile phone networks is declining.

5.4 Conclusion

This chapter presents the background and primary data associated with the first case study investigated in this thesis: Kenya. First examining the political background of the association between mobile phones and crime in Kenya and the emergence of crime threats associated with mobile communications, the

chapter then overviews existing preventative techniques developed to address specific threats associated with mobile phones, and the leveraging of mobile phones for broader crime prevention in this setting. The research findings are presented thematically, examining first the security benefits associated with mobile phones according to research participants. These comprise access to informal networks of support, the secure storage of information, access to other modes of communication to triangulate or verify information and rumour, and the facilitation of financial transfers. A range of other benefits were identified, including facilitating business transactions, providing access to employment opportunities, and organisation romantic affairs. The chapter also investigates unexpected findings concerning attitudes to formal connectivity to security forces, identifying deep-rooted ambiguities and mistrust in the organs of the state which reduce the effectiveness of formal applications of mobile phones for crime prevention.

The chapter also examines the data concerning the relationship between mobile phones, insecurity and crime, with particular focus on the dissemination of hate-speech through mobile phone networks. New crime opportunities for scams and other forms of 'mischief' were identified, and finally the chapter examined attitudes to mechanisms for the prevention of crime associated with mobile phones, such as PeaceSMS and SIM registration.

Chapter Six: Uganda

6.1 Introduction

In this chapter the background and findings of the second case study are presented, examining the risks and benefits associated with the use of mobile telephony for crime and security in Uganda. The chapter commences with an analysis of relevant literature on migration and mobile telephony, contextualising the primary data analysis that follows. The specific context of refugees and migrants in Uganda is addressed first, followed by an analysis of the importance of mobile telephony for the social and economic wellbeing of migrants, and the security benefits and threats associated with these tools for displaced users.

In the second part of this chapter, the primary data collected among displaced mobile phone owners, users and non-users in Uganda are presented and analysed; including content analysis of qualitative data collected through interviews (n=5) and FGDs (n=3) and statistical analysis of quantitative survey data (n=194). These analyses reveal both benefits and threats associated with formal and informal uses of mobile telephony, including the coordination of violence and crime, fraud and financial scams, the dissemination of false information and theft of handsets. Specific vulnerabilities affecting the study participants in Uganda are identified through analysis of the FGD data in particular, setting the scene for the subsequent analysis in Chapter Seven. This chapter concludes with an overview of study participants' attitudes to mobile phone crime prevention mechanisms, and crime prevention mechanisms leveraging mobile phone networks.

6.2 Mobile telephony, crime and security for migrants in Uganda

Studies suggest that mobile phones have particularly important security benefits for users during periods of emergencies. Migrants and refugees have received particular attention, and it has been demonstrated that mobile phones provide unparalleled advantages for users to share and access information and resources during times of need. These benefits are associated with connectivity to both informal social networks and formal organisations. Studies of crime victimisation among refugees focus on physical crime in refugee settlements, with digital crimes receiving little attention. Migrants in Uganda therefore provide

a useful case study through which to investigate the relationship between mobile telephony, crime and security.

6.2.1 Refugees and migrants in Uganda

The second case study investigated in this thesis comprises the situation of refugees and migrants in Uganda. It is therefore important to introduce some background information about the scale and context of migration in East Africa, and to situate the specific populations investigated in this study.

It is estimated that Uganda hosts over 350,000 refugees, residing in both urban and rural parts of the country. Uganda provides specific refugee settlements with basic services, and also provides free transportation for refugees fleeing conflict in neighbouring countries. Uganda is perceived as a safe destination for refugees in a region plagued by instability. The majority of refugees in Uganda originate from the Democratic Republic of the Congo (DRC), Sudan and Somalia, where outbreaks of conflict frequently result in high levels of instability and violence (UNHCR, 2015). Nearly two-thirds of the refugees residing in Uganda in 2015 arrived in the previous five years, fleeing the escalating violent conflicts in their countries of origin.

Uganda's refugee policies are widely regarded as progressive, and refugees are granted similar freedoms and opportunities as Ugandan citizens. These policies have been described as, "a model for Africa" (Akello, 2009). In 2006, legislation was adopted recognising the rights of refugees to work, freedom of movement, and the right to live outside of refugee camps (The Refugees Act, 2006). Uganda is therefore a popular destination for East African refugees, many of whom settle in Kampala (Krause-Vilmar, 2011; Omata, 2012; Omata & Kaplan, 2013) as well as refugee settlements across the country.

The Government of Uganda allocates land for designated refugee settlements in rural areas, which are coordinated by the UN High Commissioner for Refugees (UNHCR, 2015). In these settlements UNHCR provides access to basic needs and relief items including healthcare, nutrition, and shelter, as well as support for the establishment of livelihood activities to support resilience and self-sufficiency. Refugee settlements in Uganda are nevertheless extremely resource-poor environments. Materials provided include a container for water, basic cooking utensils, and a tarpaulin with which to construct shelters

(UNHCR, 2015). With these materials, and the provision of basic foodstuffs (rice and beans) and clean drinking water, refugees are encouraged to farm the land and become self-sufficient.

Despite the protective legal framework and the provision of humanitarian assistance to address basic needs, refugees in Uganda arrive into resource-constrained environments with few possessions, and many still face social and economic discrimination by local populations (Krause-Vilmar, 2011). This socio-economic marginalisation is compounded by disconnection from traditional social networks, and displaced populations value mobile phones accordingly for the connectivity they provide (ICRC, 2011).

6.2.2 Displacement and mobile phones

An emerging body of literature suggests that mobile phones are particularly valuable for migrants and displaced populations who are disconnected from their traditional social networks (ICRC, 2011; Horst, 2006; Moloney, 2012; Wilding & Gifford, 2013). A range of studies suggest that mobile telephony provides socio-economic benefits for crisis-affected populations, particularly for the maintenance of social support networks enabling users to share information and call for assistance (Abraham, 2007; Aker & Mbiti, 2010; Blumenstock, et al., 2011; Jack & Suri, 2014; Overa, 2006; Souter, et al., 2005; Tenhunen, 2008, contributing to economic welfare benefits (Aker, 2008; de Silva & Ratnadiwakara, 2008; Jensen, 2007; Overa, 2006) and maintaining transnational familial bonds (Horst, 2006; Horst & Miller, 2006). However, insufficient attention has been paid to the security implications of mobile telephony for displaced users, both positive and negative. This case study was selected in order to address this knowledge gap.

Refugee livelihoods is a popular area of academic investigation, and mobile telephony is widely regarded as a powerful tool for refugees to enhance their livelihood opportunities. The protracted nature of refugee crises is associated with declining donor interest in providing long-term support for refugees, leading to the promotion of policies designed to empower them as active economic agents and increase their self-sufficiency (Jacobsen, 2001; 2005). Mobile telephony provides a powerful mechanism for dispersed social networks to communicate, share resources, and establish successful livelihood strategies.

As Moloney notes in the editorial to a special edition of the *Journal for Information Technology for Development* on human mobility,

Whatever the motivation for migration - whether voluntary or involuntary - it is here that the very mobility of the mobile phone comes into its own, enabling migrants to remain in communication with existing contacts, and to communicate within new networks as they develop. (2012, p. 88)

Previous studies widely document the importance of social networks for enhancing refugee livelihoods. For example, in a working paper prepared for UNHCR, Amisi (2006) draws on interviews and participant observation to examine the livelihood strategies of Congolese refugees in Durban, South Africa, questioning why some adapt and integrate into South African society while others migrate to refugee camps. Amisi finds that social networks are critical to the success or failure of refugee livelihood strategies: access to employment, capital, and opportunities depend on these networks. Porter et al. (2008) describe similar findings in an analysis of Liberian refugees in Buduburan refugee camp in Ghana. Based on data from FGDs, interviews, photo diaries and participant observation, Porter et al. (2008) describe a complex interplay of social networks and economic strategies through which remittances provide a source of economic security for camp-dwelling refugee communities, particularly in the absence of alternative economic opportunities. Mobile phones, in these analyses, enable migrants to maintain social networks even when these networks are geographically dispersed. Furthermore, these networks facilitate access to resources and opportunities for refugees living in resource-poor settings with limited opportunities for social or economic advancement, such as refugee settlements.

Studies of the use of mobile phones by diaspora also demonstrate their importance for the maintenance of social networks, and for members of diaspora communities to provide informal support to less fortunate members of their social networks (Collins, 2009; Horst, 2006). For example, Collins (2009) investigates the importance of mobile communications among Somali diaspora. For residents of Somalia, poor state provision of services and unpredictable living conditions create an unstable environment. However, transnational

migration patterns coupled with mobile connectivity with distant kin enable social networks to provide support and assistance during times of need, providing a valuable mechanism to overcome this instability. Collins notes that for transnational Somali communities, “connections – rather than one’s bank account or asset holdings – provide the underlying safety net” (2009, p 213).

Social networks have also been identified as critical for refugees and migrants in Uganda specifically (Krause-Vilmar, 2011; Omata, 2012; Omata & Kaplan, 2013;). Based on interviews conducted in Kampala, Omata (2012) describes the economic strategies of refugees and migrants extending across a wide range of business activities. Classifying them according to their relative economic success, Omata notes that struggling refugees and migrants (categorised as ‘surviving’) have fewer connections, whilst those classified as ‘thriving’, “are usually equipped with extensive business networks” (2012, p. 15). A report published by the Women’s Refugee Commission on refugees in Kampala also argues that economic security is critically facilitated by social support networks (Krause-Vilmar, 2011). Based on over two hundred and fifty qualitative interviews combined with participant observation, the report states, “refugees rely on social networks as their informal safety net” (Krause-Vilmar, 2011, pp. 10-11). In a subsequent study of refugee livelihoods both in Kampala and in two rural refugee settlements, Nakivale and Kyangwali, Omata and Kaplan (2013) also highlight the significance of social networks for livelihoods and economic security, noting that refugees value transnational networks in particular for accessing remittances and exchanging information. In addition to these informal benefits, formal applications of mobile telephony for crisis-affected and displaced populations are also increasingly recognised and promoted (Coyle & Meier, 2009; ICRC, 2011; IFRC, 2005; Wall & Robinson, 2008; Wall, 2012), as addressed in Chapter Two.

Although the *social* and *economic* benefits of mobile connectivity for refugees and migrants are widely recognised in existing studies, limited attention has been paid to the benefits for users’ personal security. Although the economic security associated with livelihoods comprises an element of this, this case study is used to investigate users’ security to crime threats specifically.

6.2.3 Mobile connectivity and risks for migrants

Given the established connection between mobile telephony and livelihoods (Aker, 2008; de Silva & Ratnadiwakara, 2008; Jensen, 2007; Jensen, 2007; Overa, 2006) and access to support during crises (Abraham, 2007; Aker & Mbiti, 2010; Blumenstock, et al., 2011; Jack & Suri, 2014; Overa, 2006; Souter, et al., 2005; Tenhunen, 2008), the benefits of mobile telephony for displaced populations are numerous. Recognising these benefits, there remains limited acknowledgement of potential risks introduced by mobile telephony. Where security risks associated with mobile phone use are acknowledged, they tend to focus on high-level risks associated with increasing opportunities for surveillance and privacy concerns. For example, in the introduction to a special issue of the *Journal of Refugee Studies* on *Forced Displacement, Refugees and ICTs*, Wilding and Gifford acknowledge that ICTs, particularly mobile phones, both provide new opportunities and introduce new risks for migrants and refugees,

...even as they create opportunities for empowerment, they simultaneously open up new prospects for the management, control and exploitation of populations and individuals on the move. This is what makes attention to the relationship of ICTs to refugees, asylum seekers, the internally displaced and undocumented migrants so urgent. This intersection requires specific attention precisely because of the precariousness of forced migration and the capacity of ICTs to be used for both good and harm. (Wilding & Gifford, 2013, p. 496)

Examining how ICTs (including mobile phones) intersect with processes of globalisation, Wilding and Gifford focus on the connection between identity and territory, border control and surveillance in Europe and Australia. In these developed world contexts, mobile phones are now ubiquitous, "... so common as to be taken almost for granted, playing an important role as a simultaneously personalized and social technology" (Wilding & Gifford, 2013, p. 497). The recognised threats associated with these tools are not concerned with individual experiences of crime and insecurity, but rather with the potential for mobile telephony to increase opportunities for surveillance and control. While these potential impacts are important, this focus may obscure user-level experiences

of crime and insecurity associated with these tools. For migrants and displaced populations who rely on mobile telephony for access to emotional, financial, and physical support and assistance from diverse social networks, any crime and security risks associated with these tools are likely to be particularly critical.

6.3 Research findings

This section presents and analyses the primary data collected in Uganda, including qualitative and quantitative survey (n=194), FGD (participant numbers unrecorded, see 7.7 for analysis) and interview (n=5) data. The methods are discussed in the previous chapter, and research instruments are provided in Appendices 2 and 4.

The research findings presented here are structured in four core sections. The first section provides an overview of the study findings concerning mobile phone ownership. The survey data are presented, and a summary provided of reported mobile phone ownership among FGD and interview participants. The next section presents the findings of the survey and FGDs concerning both informal and formal security benefits associated with mobile telephony from the perspective of displaced mobile phone owners, users, and their communities, triangulated with responses from interview participants. The third section draws on survey, FGD and interview data to investigate the range of crime and security threats identified during the study, including the transmission of threats and violence, fraud and financial scams, false information and the theft of mobile handsets. The fourth and final section discusses survey, FGD and interview data relating to existing crime prevention methods using mobile phones in Uganda.

6.3.1 Mobile phone ownership and access among participants in Uganda

While access among the urban survey sample in neighbouring Kenya (according to data from the sample of 297 survey participants) was around 98%, the urban and rural samples in Uganda demonstrate considerable variability, and the following overview is therefore needed to contextualise the subsequent analysis of owners', users' and non-users' perceptions and experiences of crime and security threats and benefits.

Analysing ownership across the survey sample, 71% (n=137) of survey participants reported owning one or more mobile phones. This figure exceeds

the official estimate of 64% mobile penetration in Uganda, based on country-level data collected from national mobile operators (GSMA, 2015b), although the constitution of the survey sample was not anticipated to be representative of the population of Uganda, since it comprises non-Ugandan citizens.

However, disaggregating the sample reveals differences between mobile ownership rates reported by participants in the two locations where surveys were conducted. Around half (48%) of survey respondents in the rural villages in Kyangwali settlement reported owning one or more handsets compared with 90% of respondents in Kampala. Reinforcing the survey findings, participants in two of the three FGDs in Kyangwali also described low rates of ownership of mobile phones. Of around 70 FGD participants in Malembo, 15 self-identified as mobile phone owners. In Kentome, 11 participants out of a total group size of around 70 reported owning mobile handsets. In the third FGD conducted in the long-established refugee village of Kisonga, 14 of 19 participants reported owning mobile phones. This contrast between low rates of ownership among FGD participants in Malembo (21%) and Kentome (16%) and high ownership in Kisonga (74%) invites further reflection. One possible explanation is the difference in the duration of their residence in the settlement. FGD participants in Kisonga described living in the village for between 7 months and 17 years, with over half the group residing there for over a decade. In Malembo and Kentome, the majority of FGD participants described residing in the settlement for less than one year. Another possible explanation concerns the gender balance of these FGDs. In Malembo and Kentome, the numbers of men and women were roughly equivalent; while in Kisonga, the majority of participants were men.

Although no differences were found in mobile ownership between men and women in Kenya, the GSMA estimates that women in Africa are 23% less likely than men to own mobile phones (GSMA, 2012). Previous studies support this, correlating factors such as employment, education and income with women's lower use rates of ICTs, including mobile phones (Hilbert, 2011; Deen-Swarrray, et al., 2012). In addition to highlighting differences in mobile phone ownership between Kampala and Kyangwali, further disaggregating the survey data suggests that differences between men's and women's ownership in Kampala

are negligible compared to those between participants in Kyangwali settlement, as figure 17 shows.

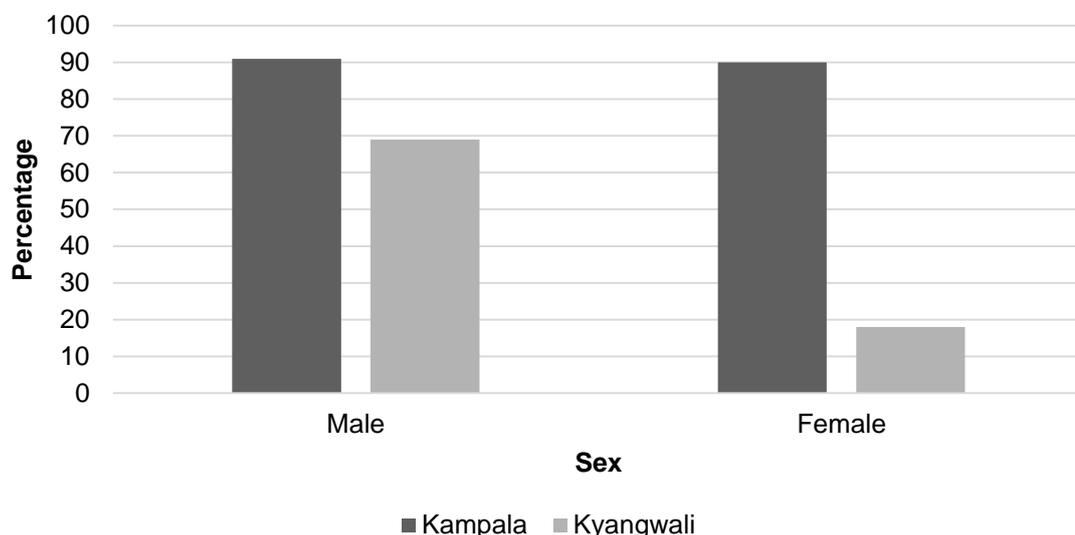


Figure 17: Mobile phone ownership by sex in Kampala and Kyangwali

Analysis of the FGD discussions corroborate these survey findings concerning differences between men’s and women’s mobile ownership in Kyangwali. Two of the FGDs (Malembo and Kentome) were composed of approximately equal numbers of male and female participants, but ownership of mobile phones was reported predominantly by men. In Malembo only one female participant acknowledged owning a mobile phone, which she wore consciously on a lanyard around her neck. In contrast, fourteen male participants identified themselves as mobile phone owners. In Kentome, only two women owned handsets (which they also displayed conspicuously, one on a lanyard and one holding it on her lap throughout the discussion), compared to nine men. In Kisonga the FGD contained more men (n=16) than women (n=3). Of these participants, 13 men and one woman reported ownership. Due to the high numbers of participants in the FGDs it proved difficult to collect data about sharing behaviours among the groups. However, the survey data indicate that overall, one quarter of survey participants reporting non-ownership of a handset describe sharing access to one (n=15). Eleven of these sharers reside in Kyangwali, although the small number of responses to this survey question precludes detailed analysis of these differences.

Of three refugee representatives (youth leader, convoy chairperson, and religious leader) interviewed in the settlement, two did not own a mobile telephone and had no means to contact service providers in the settlement, despite formally representing their communities to these providers. During an interview, the youth leader in Kentomi village in Kyangwali explained, *“communication is done using megaphones when the food trucks arrive, or by walking around. Sometimes we leave notes with passing trucks to get to people”*. Within Kyangwali settlement the use of hand-written messages on scraps of paper and megaphones was prevalent at the time of the fieldwork: One participant contacted the researcher using a handwritten note on a scrap of paper torn from an old newspaper (see figure 18).

Mobile phones provide users with several communicative options. Basic handsets offer both call and SMS functions. Ostensibly, SMS are more cost-effective and may be used in contexts where signal coverage is weak, such as in Kyangwali settlement. The study findings indicate that mobile phone calls are more widely used during crises. This may be a consequence of the low literacy rates among the sample, or it may be that the value associated with verifying

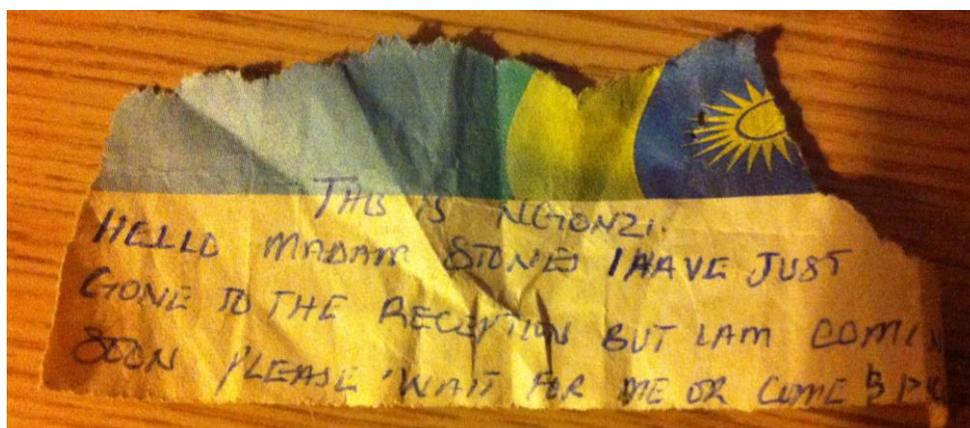


Figure 18: Handwritten note left for the author by the roadside in Kyangwali

the source or recipient of a message associated with mobile phone calls outweigh the benefits of cost and convenience associated with SMS, making users more likely to make calls than send SMS during crises. This is explored further in the Chapter Seven.

The data suggest that mobile phone ownership is highest among refugees and migrants living in the urban capital, and amongst male refugees in established rural villages. These inequalities of ownership and access intersect with crime

and security risks and benefits associated with mobile ownership, contributing to different patterns of vulnerability as discussed subsequently.

6.3.2 Security benefits for displaced populations

Analysis of the fieldwork data collected in Uganda reveals that mobile telephony is broadly associated with economic, physical and emotional wellbeing and provides several critical security benefits for displaced populations. Previous studies described earlier in this chapter, and in Chapter Two, acknowledge a range of benefits for socio-economic wellbeing and enhancing user livelihoods. The study findings reveal, however, a wide range of security-enhancing benefits, many of which are specifically concerned with the prevention of crime.

6.3.2.1 Mobile phones and personal security

Examining security benefits associated with mobile phones, analysis of the survey data provides an introduction to the study findings. The FGD data provides more detailed, qualitative data through which these broad findings can be examined and triangulated.

During the survey, participants were asked to what extent they agreed or disagreed with the statement, “*having a mobile phone contributes to my personal security*”. Three quarters (n=101) of mobile phone owners and users

responded that they 'agree' or 'strongly agree' with this statement. The spread of responses is shown in figure 19 below.

These data correspond with responses to another survey question, which asked

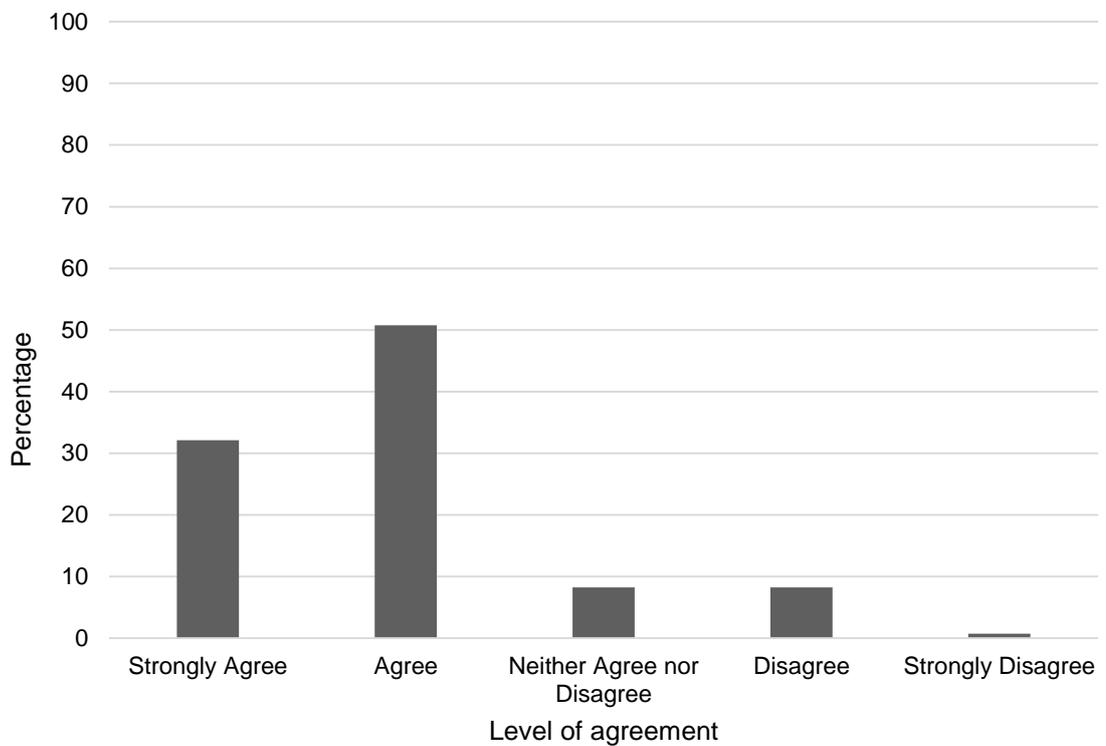


Figure 19: Levels of agreement with the statement, "Having a mobile phone contributes to my personal mobile phone owners and sharers the hypothetical question, "How secure would you feel in your everyday life without a mobile phone?" and provided them with a range of options from 'very secure' to 'very insecure'. Their responses are presented in Figure 20.

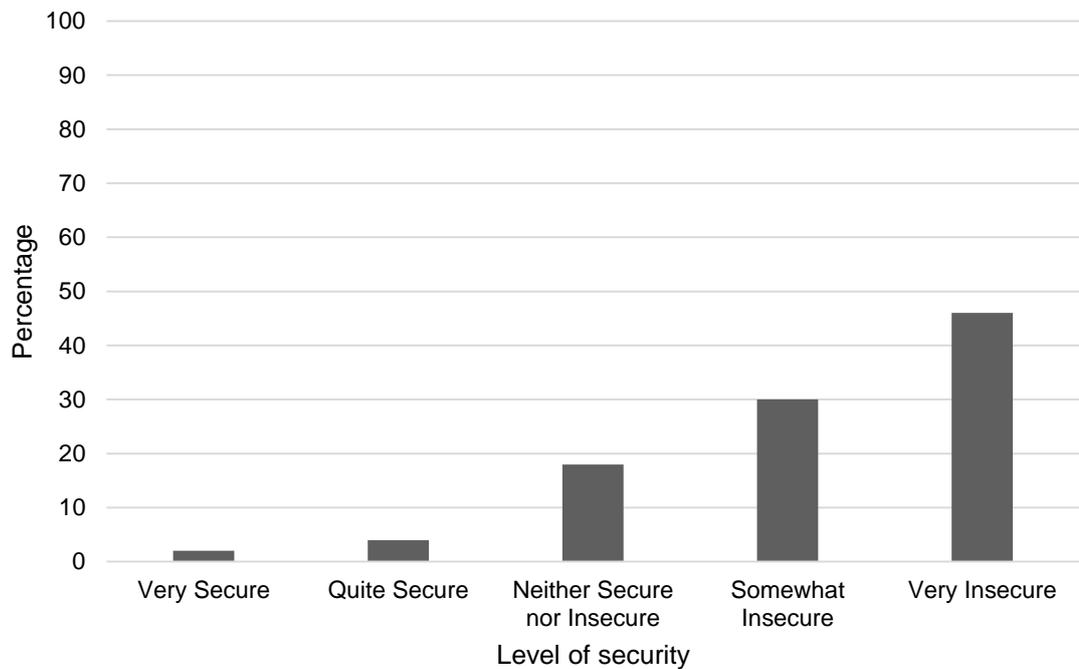


Figure 20: Responses to survey question, "how secure would you feel in your everyday life without a phone?"

More than three quarters of survey participants who reported owning or sharing a mobile phone responded that they would feel *somewhat insecure* or *very insecure* without their mobile phone (n=107). Participants were asked to provide further qualitative information to explain their answers, although none of the respondents who reported feeling *very secure* or *quite secure* provided further qualitative information about their feelings. Respondents who reported feeling *neither secure nor insecure* without a phone provided neutral comments such as, “*I need it, but when I don't have it, it's ok*”, “*I use it for business but it has no effect on me*” and, “*I can do without it and I won't feel bad*”.

Respondents reporting feelings of insecurity provided a range of responses, subsequently coded into five categories. The distribution of responses in each of these categories is shown in figure 21.

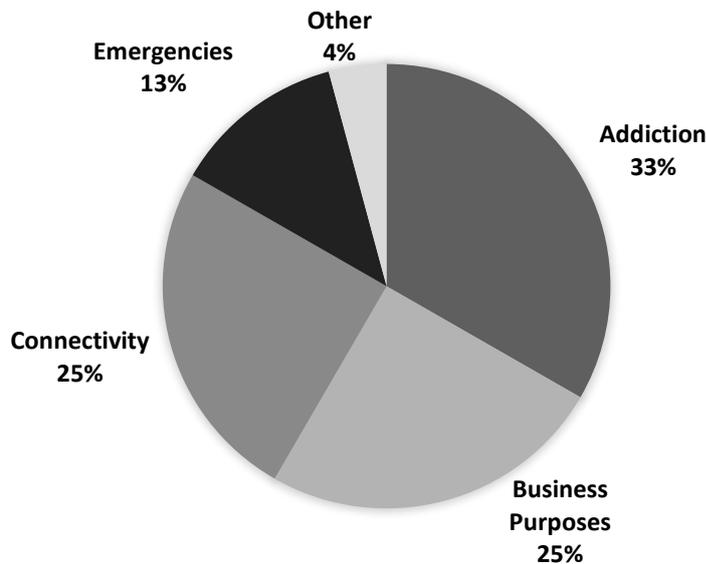


Figure 21: Reasons for feeling 'somewhat' or 'very insecure' without a mobile phone according to survey participants

These responses are examined in relation to FGD discussions and quantitative survey data in the subsequent sections.

It is noteworthy that the 'security' benefits described by study participants include a range of social, psychological and economic benefits. The majority of these do not directly relate to experiences of crime or crime prevention. It is likely therefore that either the survey questions were unclear, or that the meaning of 'security' was either interpreted, or translated, differently than intended. These issues are discussed in depth in Chapter Seven. Nevertheless, the data analysis reveals users' attitudes and perceptions of the benefits of mobile phones that can be fruitfully analysed in relation to the crime and security threats and preventative mechanisms identified, and are therefore presented here.

In the previous case study, the first and most critical security benefit associated with mobile phones was access to informal networks of support, particularly during emergencies and periods of insecurity. In Kenya, these were found to be particularly important for vulnerable groups such as young people and the elderly. Similar findings emerged in Uganda among displaced populations, where survey participants described their 'addiction' to the connectivity provided by mobile phones. The most common explanations for feeling insecure without a phone, as described by over half of all survey participants, were categorised

as 'addiction' and 'connectivity'. Participants' responses categorised as addiction, comprising a third of the sample, include, "*because of addiction to my mobile phone*", "*it's part of me*" and, "*I am used to a phone, I can't stay a day without a phone. It's like a guardian to me*". These responses demonstrate the strength of feeling associated with mobile phones, indicating that these tools provide a psychological function for displaced populations. Responses coded as 'connectivity', comprising a quarter of the sample, describe the maintenance of communication with family and friends as a key security concern. Examples include, "*I always want to know that my relatives are ok, so it would make me feel uneasy*" and, "*I have to communicate to my parents every day*". Both responses categorised as 'addiction' and those categorised as 'connectivity' express users' perceptions of the psychological or emotional benefits associated with mobile phones, and their value for maintaining connectivity with loved ones. Furthermore, in comments provided at the end of the survey for example, migrants frequently described the value of mobiles for maintaining connectivity with dispersed family members noting, "*When we hear or watch news of our country Somalia, my parents make a phone call to Somalia*", "*Mobile phones were rare in the Sudan civil war. Now we can use mobile phones to communicate easily with our people. We Sudanese are refugees everywhere, but through mobile phones we can talk to each other*", and "*It keeps me in touch with some family who went as refugees in another country, to Tanzania*".

These responses emerged with equal frequency among respondents in Kampala and those in rural Kyangwali settlement. Analysis of the FGD data from Kyangwali suggests that for these users, a key aspect of this connectivity was access to information about family members. However, participants mentioned accessing information about *death* more frequently than about *health* or *wellbeing*. For example, several female FGD participants in Kisonga mentioned valuing mobile phones for getting information about their families, particularly 'difficult' information about deaths. Similarly, in Malembo one female participant stated that mobile phones are valuable, "*for getting difficult information directly*". Responding to these comments about the value of mobile phones in Malembo, another female participant commented, "*Since our arrival here after many months, we have heard nothing from our relatives, we have no*

way to hear from them.” Female FGD participants in Kyanwali frequently cited access to difficult information as a key security benefit of mobile phones, although their reported rates of mobile phone ownership and use were low. Among the survey sample, less than one fifth of female participants in Kyangwali reported owning a mobile phone, with most reporting access through male family members.

Financial security also emerged as a common theme in the Uganda data. One quarter of survey participants described financial or business-related reasons (coded as ‘business purposes’) for feeling insecure without a phone such as, *“I do business, so I need my phone on always”*, *“I call my business customers daily, so it makes me feel secure for money - it’s a must”* and, *“In case I am broke, [mobile phones] can be borrowed and in scarcity, can connect to a friend who can help out”*. Migrants residing in Kampala commonly described accessing financial resources as a key benefit of mobile connectivity, both in terms of everyday transactions and during economic emergencies.

Similar economic benefits were described by male FGD participants in Kyangwali, although women participating in FGDs did not mention financial benefits or mobile money. A male participant in Malembo explained, *“If we had mobile money, we would use it to receive money from our relatives. We have no way of making money here, we are stuck”*. This remark met with general agreement amongst men in the group, as did a comment made by a male participant in Kisonga who explained that mobile telephony enabled him, *“to get money from people far away, to save on transport costs”*. In the Kentome FGD, male participants primarily focused on the benefit of mobiles for contacting relatives in Bundibugyo refugee transit camp for the purpose of accessing distant resources, stating for example,

If my family wanted to send me money, they can’t. I left my goats in Bundibugyo, they are all there. I can’t ask my family to sell them, to send me the money. I have no way to get them.

One FGD participant in Kisonga described the creative strategy used by refugees in Kyangwali to facilitate international transfers. He explained that in order to overcome the particular challenges associated with managing cross-border transactions, a trusted agent at the border is relied upon to withdraw the

Ugandan mobile money transfer, physically cross the border, and make a new transfer within DRC,

...we send it (an m-money transfer) to family in Bundibugyo¹⁷, then they walk with it and take it across and send it on to the people. They take something out, and send what is left on to the people we want...

Other participants in the group nodded and an animated discussion ensued. Several participants' contributed to the discussion, with three indicating that they had personally made an informal, transnational, m-money transfer.

In addition to the benefits for *accessing* and *transferring* financial assets, participants also described using mobile phones for the secure *storage* of financial assets. In Kisonga, a male FGD participant explained, "*we discovered that it is possible to put our savings inside the phone*", describing this as a key benefit of mobile money services. Another group member elaborated, "*When they are inside [the phone] they cannot be taken. But then we can take them out to do the needful*". Others in the group expressed dissent, and it transpired that other than the two initial speakers, few users take advantage of these storage opportunities. FGD participants explained that storing money within mobile money services is not a common practice within the settlement as access to mobile money is available in only one village and unreliable liquidity prevents users from withdrawing money, as one participant described, "*sometimes you cannot have access to your savings. If the agent does not always have it for you, even if you have it inside your account, then this thing is not possible*". For refugees and migrants residing in insecure environments, the security benefits associated with mobile phones for the secure storage of financial assets *in theory* are considerable. However, the data suggests that these benefits are limited *in practice* by considerations of access and reliability of service provision in resource-poor areas.

6.3.2.2 Security benefits during emergencies

In addition to general benefits of mobile phones for users' personal security in general, participants widely described important security benefits during

¹⁷ A town in Western Uganda bordering DRC, near the Bubukwanga Refugee Transit Centre

emergency and crisis situations. In fact, the second most common security benefit associated with mobile phones according to displaced participants in Uganda (equally by male and female participants) concerns their utility during emergency situations. About a fifth of the qualitative responses provided by survey participants to explain feeling 'somewhat' or 'very insecure' without a mobile phone were coded as 'emergencies', which includes comments such as, "*phones help in communicating an emergency*", and, "*mostly in case of problems, I call easily and know I will get helped*". These comments describe various benefits specifically related to the use of mobile phones during emergency or crisis situations, including financial assistance, physical aid and emotional support.

Survey participants' were asked to describe their experiences of using mobile telephony during crises, and 27% (n=56) of the survey sample responded to this question. These responses were categorised and are presented in figure 22, excluding three participants who provided general comments rather than describing experiences. Of participants who described their experiences, 74% reporting using mobile phones to *transmit warnings* to members of their social networks of impending violence or to coordinate safe exit from a crisis-affected area. For example, one survey participant explained, "*I called people who remained back in Congo and asked them to run, which they did and they were able to be saved, now they are safe*". Another stated, "*I remember my uncle used to mobilise and inform people on the phone about the war, since he was the chief of that area*". Another reported, "*I remember I was the only one with a phone in my village and when war started in other villages I was called upon to inform people about the war, and we ran away*". One survey participant described receiving a warning via SMS which originated from within the M23 rebel group. He explained, "*I escaped death through information from a friend who was alerted by a fellow friend who belonged to the rebel group that was coming to destroy our village*". These informal social networks were regarded as valuable for accessing current information about emerging threats, and these examples demonstrate that mobile phones facilitate the flow of information across social groups, as well as within them. For example, the participant who received a warning message originating within the rebel group was able to do

so as a result of the informal social network that included both perpetrators and potential victims.

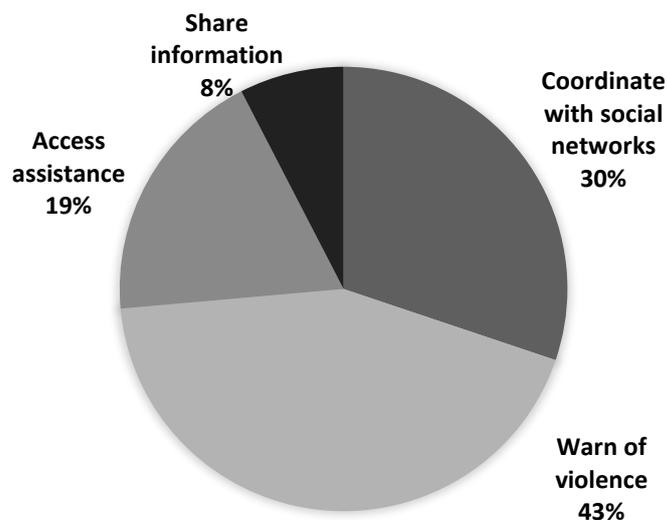


Figure 22: Stories from Uganda on the use of mobile phones during crises

Around one fifth of respondents described their use of mobile phones during crises through stories of *accessing assistance*, such as, “*during floods ... I used my mobile to call friends and relatives in order to come rescue me*”, “*during a fire outbreak three months ago at a neighbour’s place, I used my phone to call police*”, and “*in the Bududa landslide¹⁸, one of my friends that was buried in the house by mud called saying he was still alive even when the rescue efforts had been almost given up, and he was saved*”. During FGDs these themes also emerged. Female participants in Kyangwali described key values of mobile phones for enhancing physical and emotional security, enabling them to access help and assistance. For example one female participant in Kisonga explained, “*if you get in an accident or there is trouble you can call for help*”. When referring to calling for help, participants universally described accessing assistance from their personal social networks, but *formal crime reporting* was not spontaneously mentioned by any participant, as addressed in the subsequent section.

Returning to the benefits of mobile phones during emergencies, the remainder of respondents described using mobile phones to coordinate and *share*

¹⁸ Landslides have occurred in Eastern Uganda both in 2010 and 2012, destroying villages and causing hundreds of deaths

information about the escalation or de-escalation of crisis, for example, “to communicate to others how the crisis is in my area and how it is where they are”, “I told relatives it is safe where I am, and they also left and joined us here” and, “ I wrote numbers of relatives and when I reached Uganda I called and told them where I am, and they looked for this place and they were brought to the same camp, and now we are together here”.

These findings corroborate the findings of other studies that suggest that mobile phones can enhance users’ physical security, providing people with a means to access and provide informal assistance during times of need, and will be examined in relation to these in Chapter Seven.

The survey and FGD data reveals that informal uses of mobile telephony provide a range of security benefits for migrants and refugees in both Kampala and Kyangwali settlement, and are valued for accessing physical assistance, psychological support and financial assets. Participants described using mobile phone-enabled communications to protect the lives and livelihoods of friends and relatives, share information about impending threats, and remain in contact with friends and relatives dispersed by war. Financial benefits were more commonly described in Kampala, while displaced populations in rural areas, and particularly women, were more likely to discuss the use of mobile phones for accessing psychological and emergency support.

6.3.2.3 Crime reporting and crime prevention

The study also identified formal services utilising mobile phones for reporting and responding to crime. Two formal services using mobile phones were provided for refugees living in Kyangwali settlement during the period of this study. The International Red Cross (IRC) service provided one national and one international phone call to each resident every three months (IRC Representative, personal communication), and the American Refugee Committee (ARC) gender-based violence (GBV) hotline provided a free, 24 hour service for victims of GBV in the settlement (see figure 23). Although limited information is available on these mechanisms in the public domain, an evaluation report on the GBV hotline published by the OECD describes the initiative as highly successful, “100% of calls to the hotline seeking GBV direct

or referral services (were) responded to, a total of 3,145 calls responded to between September 2012-May 2013” (OECD, 2013, p. 57).



Figure 23: Photograph of ARC GBV Hotline poster, taken by author in ARC HQ, Kyangwali Settlement

FGD participants expressed awareness of the GBV service, although due to the number of participants and challenges of translation, it is impossible to estimate how many. One participant in each group mentioned the hotline and the rest nodded and commented in Kicongo or other local dialects. Amongst mobile owners and sharers among the survey sample, only 7% (n= 11) reported awareness of any mobile platforms or services for crisis-affected populations. A further 7% responded “I don’t know”, while 86% of respondents reported that they were not aware of any formal services using mobile phones.

Of the few survey participants who reported awareness of mobile services, more than half of these described general services available to all mobile users, such as mobile banking and access to news and current affairs. Only three survey participants described specific crisis-response services; two mentioned the ARC GBV hotline, and one described having, “*the doctor’s number concerned with maternity issues*”. However, additional information about the use of the GBV reporting hotline can be gleaned from responses to other survey questions. When asked to describe an experience of using a mobile phone during a crisis, one participant explained that he had used the hotline to contact police for a non GBV-related incident,

One day in Kagoma village, two men were fighting. Then I had nothing to do, I just beeped ARC hotline. They called me back

and I told them the incident, and they helped me to inform police.

This example suggests that mobile phone users in the settlement are willing to utilise formal crime reporting services. Furthermore, in the absence of a formal mechanism for reporting crime, mobile phone users who witness crime are using the GBV service for reporting non-GBV related crime. An ARC representative interviewed in Kyangwali Refugee Settlement corroborates this, commenting that refugees regularly use the GBV service for non-GBV related purposes:

Many call for assistance to this number. There is a response mechanism, if the call is legitimate, we can contact the police, then we will go together to respond to the incident.

According to the ARC representative interviewed, for legitimate GBV incidents the response mechanism involves the immediate joint deployment of on-call ARC staff and police officers. However information was not provided on the number of calls made to this service which are GBV-related, and the number of users who utilise the hotline to report other times of crime. The study found low rates of mobile phone ownership and use among women; the key beneficiary group the GBV hotline aims to support. This suggests that many target users of the service (women) may be unable to access the GBV hotline. Furthermore, in light of the inherently intimate nature of GBV, mobile telephony may not be the most effective tool for a GBV-response mechanism. It seems likely that help from friends and neighbours may be a more immediate and accessible form of assistance for vulnerable women, although it was not appropriate to discuss this sensitive topic during the study.

While declining to comment on the number of women using the service to report GBV-related crime, the ARC representative interviewed described drunks calling to abuse the free service,

...sometimes they are calling just to abuse us, for some laughs. These people are wasting our time, but they are drunks. There is nothing to do, it is expected. The risk of abuse is high...

During the fieldwork, it was noteworthy that residents of the settlement lacked reliable, two-way communications platforms to express their concerns to service providers. No general crime reporting mechanisms were available, and no formal channels were provided to enable residents to report crime or access assistance. With the exception of an ambulance service providing medical assistance, the GBV hotline was, at the time of this research, the main formal means of directly contacting service providers. It was the only mechanism designed for users to report crime, despite which it was designed solely for use by women affected by GBV. As noted, data collected for this study indicates that the effectiveness of the GBV hotline is likely to be hampered by the low levels of mobile phone access and ownership among women in the settlement, poor signal coverage, lack of power to recharge mobile phone batteries and the lack of alternative two-way communication mechanisms for reporting other crime and security concerns.. These impediments also reduce the effectiveness of informal mechanisms through which mobile phones may enhance users' security. For example, during the FGD in Malembo one young man stated, *"MTN network is very poor here, we have to walk far to make a call"*. This comment was met with expressions of assent from others in the group, nodding and pointing in the direction they would walk to search for reception. Another (male) FGD participant in Malembo commented,

We must travel at least one kilometre to search for signal. In emergencies we need to call for help but cannot. Even today there was a problem like that, a woman had need of an ambulance for her child but there was no way. In emergencies we do call on the Chairman, or call on our neighbours.

A comment made by the Chairman during an interview addresses the implications of this isolation,

Malembo is far away and communication is a big problem. My job is to ensure that the refugees in Malembo have access to their full rights. People are dying here because they cannot communicate – they have phone credit, there is an ambulance but they cannot contact them, so their families have died.

An evaluation report conducted on the GBV hotline service in 2013 does not acknowledge the limited ownership and access of mobile tools and weak mobile signal coverage as impediments to the effectiveness of the service, focusing instead on institutional level capacity and the response mechanisms, such as the availability of fuel and transportation needed to respond to calls (OECD 2013). While the response component is critical, awareness of and access to this mobile-enabled service are necessary preconditions for its effectiveness in addressing gender-based violence. In the meantime, displaced mobile users and their communities remain disconnected from formal security services and are reliant on personal networks for support and information.

These findings suggest that these displaced populations recognise the potential value of mobile telephony for enabling lifesaving communications, financial transfers, psycho-social support, and access to emergency assistance for mobile users and their wider communities. However, these benefits are widely associated with informal social networks rather than formal reporting and response mechanisms, and are impeded by logistical conditions that reduce their access to mobile-enabled benefits.

6.3.3 Crime and security threats identified in Uganda

The previous section describes the security benefits associated with mobile phone ownership and use according to study participants in Uganda. Security benefits associated with the informal use of mobile phones were identified, particularly during emergencies and crises. It examined formal mechanisms designed to respond to crime, and outlined also the challenges associated with accessing formal and informal benefits.

The present section presents the data regarding crime and security threats that were reported by displaced participants in Uganda. Although the majority of mobile users among the survey sample reported that they would feel insecure without a phone, and FGD participants described positive relationships between mobile telephony and personal security, the fieldwork also revealed widespread associations between mobile telephony, crime, and insecurity. A comment made by one participant at the end of the survey exemplifies this. When asked if he had any further comments to record, he stated, “*mobile phones are not the most effective means of communication because they are the tools that most*

encourage crime rates in the world". This comment typifies the widespread ambivalence associated with mobile telephony, despite the widely recognised benefits for users.

In order to examine the crime and security threats associated with mobile phones, study participants in Uganda were asked about their experiences and perceptions of specific threats, and also to what extent they agreed with statements about this topic. During the survey, participants were asked whether they agreed or disagreed, and to what extent, with the statement, "*Criminals are using mobile phones to harass and defraud people*". Almost 90% of mobile phone owners and users who answered this question (n=134) either *agreed* or *strongly agreed* with this statement (figure 24); indicative of widespread awareness of the misuse of mobile phones among the survey sample.

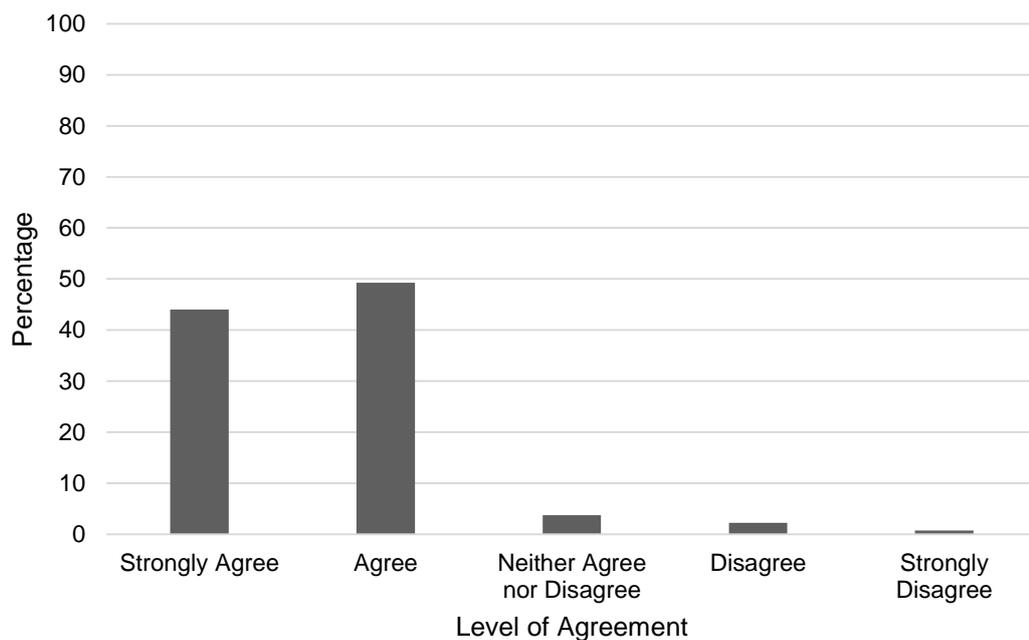


Figure 24: Degree of agreement with the statement "criminals are using mobile phones to harass and defraud people" reported by the survey sample in Uganda

This finding is substantiated by responses to specific questions about the experience of mobile-perpetrated fraud, violence, and harassment. Over half (52%) of mobile phone owners and users who participated in the survey report being victims.

Further quantitative and qualitative data was collected on specific crime threats experienced through responses to closed survey questions, and narrative descriptions of experiences of crime reported in both responses to open survey questions and during the FGDs. The subsequent sections investigate the crime threats identified in Uganda.

6.3.3.1 Threats and violence

As described in the previous chapter, mobile phone networks were widely implicated in the dissemination of hate-speech and the escalation of violence in neighbouring Kenya. Existing literature does not describe associations between mobile telephony and the organisation or escalation of violence in Uganda. Accordingly, it was unclear whether or not users in Uganda, specifically displaced users, would be affected by the dissemination of threats and the organisation of violence associated with mobile telephony. However, the data collected from displaced users in Uganda suggests that mobile phones are used to disseminate threats and to coordinate violence.

According to the survey data, around one third (30%) of mobile phone owners and users in the sample had received threats through their mobile phones. Survey participants were also asked to provide examples of any threats they had received. The majority of recipients provided further information, such as, *“Someone sent me a message that if ‘I meet you I will kill you”*, *“I used to receive SMS from an unknown person abusing and threatening to kill me”*, *“there was somebody who would call me to threaten me until I threw away the SIM card”*, and, *“I was threatened via mobile, but the police failed to catch the person who was threatening me...”* Many of these comments described the receipt of multiple threatening messages, and a common theme emerging from these comments concerns the anonymity of the sender. It is noteworthy that none of the recipients who provided further information mentioned that the threats originated from a known sender, although some did not specify the source. Around a third of these comments describe threatening messages received from ‘an unknown person’.

During the FGDs, participants also discussed the receipt of threats. For example a FGD participant in Kisonga stated,

I get some threats [via mobile] but they are not meant for me, they are [typed] in SMS and my people would know I cannot read these. So they can't be for me...

This male participant described receiving threats for which he believes he is not the intended recipient, as the sender does not take into account his illiteracy. His comment is indicative of a widespread attitude demonstrated by other participants; if the sender does not know me, the message is not intended for me. Similarly, several FGD participants described receiving messages in English or French, being unable to comprehend their content, and therefore disregarding it. For example, in Malembo one participant explained, *"I get so many [SMS] in French in Congo, but it's okay, they are not for me anyway because I don't speak French"*. From these examples, it may be hypothesised that that messages that are evidently not intended for the recipient are disregarded as irrelevant, regardless of their content. These messages may be sent to these recipients in error, or may contain threatening or fraudulent content, but for recipients who cannot comprehend their content they do not appear to present a source of concern. Interestingly, this suggests that poor education and illiteracy may actually protect users from potential crime threats utilising SMS.

In addition to describing their receipt of SMS and calls containing threatening content, study participants also expressed concern around the use of mobile phones for the *coordination of violence*. This was not discussed during the FGDs or surveys directly as the topic was considered too sensitive for this study. However, findings may be extrapolated from responses to other survey questions. One survey question asked participants to provide an example of their own use of a mobile phone during a crisis. Although most described using mobile phones to coordinate with family and friends, share warnings and call for assistance (as described previously), one Congolese survey participant in Kyangwali described the use by rebel groups. He stated, *"I used to hear armed men use their phones to communicate to themselves and their people"*. This provides an isolated and anecdotal example of the misuse of mobile networks for the coordination of violence. Further investigation would be needed to address this topic in any depth.

6.3.3.2 Fraud and financial scams

During both the survey and FGDs, fraud and financial scams were a recurring topic of interest to participants. When asked about their experiences of scams, over a third of mobile phone owners and users in the survey sample (n=42) reported being victims of scam messages or calls. Survey participants were also asked to provide further narrative data about their experiences of receiving scam messages. These comments included, *“they say I have won money and I need to pay some money in order to access what I have already won from the company”*, *“I got a message that you have won money in a certain draw yet you never participated in it”* and, *“I got a message from Kenya that I won money. I followed, but it was not true. They also wanted my account number”*. Analysis of these qualitative data indicate that financial scams experienced by study participants commonly utilize this ‘prize winning’ formula; informing participants that they have won a free gift or a sum of money. For participants in resource-poor settings, such as rural Kyangwali, the opportunity to access resources is enticing. Both FGD and survey participants described their experiences of victimization to these types of fraud.

Although the survey did not include specific questions asking participants about their experiences of victimization to mobile phone scams, several survey respondents in Kyangwali nevertheless provided qualitative information about these experiences. These responses were not prompted by survey administrators, and were recorded in different sections of the survey including the final comments and an open question about their general experience of crime associated with mobile phones. For example, one survey respondent described being a victim of fraud and losing mobile credit,

They first sent me an SMS that I won 5 million, later called me to load some money (15,000UGX) to get the money. I did it, but the money did not come. They took mine instead...

Another described wasted resources associated with travelling to a distant town in order to collect his promised prize. He explained, *“They said that I have won money and I went to Hoima, I spent a lot of money and yet it was a lie”*.

The topic of mobile phones and financial fraud was common among study participants in both the survey and FGDs. Around half of the survey sample

provided additional comments (about a range of topics) at the end of the survey, giving further detail about particular survey responses and highlighting specific concerns. Of participants who provided these additional comments, over one third referred to fraud and financial scams. For example, one survey respondent described the expense incurred as a victim of fraud,

I have realised there are a lot of con people, they deceived me that I won a car and I lost a lot of money trying to claim the car, but there was nothing.

Another comment states,

Messages are sent to me that I have won a prize, then they say I have to buy a voucher of airtime and I send to be able to receive a prize. I don't like that, they should stop.

More general comments such as, “*People lie to us that we have won money, yet it is not true*” were also common in this comments section of the survey.

Other examples provided by participants reveal the ways in which they identified the message content as fraudulent and avoided victimization. For example, one survey respondent in Kyangwali described avoiding falling victim to a mobile phone scam after sharing its content with neighbours and discovering their experiences of victimization to similar messages in the past. In this example, more experienced community members were able to warn this mobile phone user, and prevent his victimization. He noted, “*[my experience was] receiving a message that I won \$1,000. I called to find out details and they told me a lot of stories. In the village I was advised not to go because those are thieves*”. This suggests that where other, more experienced mobile phone users are able to share their experiences with less experienced users, vulnerability to scams can be mitigated. This is particularly relevant in this case study, as the financial scams described by users all utilize a similar ‘prize winning’ formula.

Another related issue that frequently recurred concerned the unexplained loss of mobile phone credit. This was the second most frequently emerging negative consequence of mobile telephony in the final comments section of the survey, mentioned by about a fifth of survey participants (18%). These comments included, “*I top-up airtime and I find it disappears without making a call*”, “*I have*

experienced that sometimes I put airtime in my friends' phone and the money disappears without me making any call", and "My airtime disappears whenever I load. I think they cheat us in Kyangwali".

During FGDs, participants also described inexplicable losses of mobile phone credit, which they attributed to mobile scams. In Kisonga, the most established of the three villages, FGD participants had resided in Kyangwali settlement for up to 17 years. Mobile ownership in this group was higher than other FGDs (13 owners of 19 participants). All the mobile phone owners in this FGD described experiencing unexplained losses of mobile credit. Most did not provide specific information about the timing and frequency of these losses, but one participant described this loss of credit occurring upon opening certain scam messages, stating "*You open it, and you lose all the money in your account*". In Malembo, few FGD participants owned mobile handsets. Despite this, participants expressed awareness of the risks of financial scams associated with mobile use, and their communications on the subject indicated that it was a common topic of discussion within the village. For example, one male participant described the experience of a friend who had fallen victim to a mobile phone scam and been beaten and robbed,

Fraud on mobiles is really common. One guy here was called and they said he had won 2 million. He went to Hoima to collect, to a place where ... they beat him and stole everything.

This example demonstrates that mobile-enabled crime threats intersect with physical environments, creating chains of opportunity for crime and enabling criminals to utilise virtual connectivity to lure victims into vulnerable physical settings to commit traditional crimes.

Other group members expressed their assent, and another commented, "*They need to raise awareness of fraud like this*". In Kentome FGD participants also recounted an event that had occurred in their village. As the story was told by several interlocutors and partially translated, no direct transcript was collected. In summary, one mobile phone owner had received an SMS informing him of winning a large sum of money, which required a deposit to access. The man approached friends with whom he shared the handset for help. Several of these men (two of whom were in the FGD) pooled their resources to collect the

amount required to pay the deposit, believing this would enable them to receive the prize and agreeing to share it between them. However, once they uploaded the mobile credit to the value of the deposit, the credit disappeared and they discovered they had jointly fallen victim to a scam. Communal ownership and sharing may both increase and reduce vulnerability. In the example above, sharing increased the number of victims and the value of the assets stolen. In the other examples provided here, potential victims were protected by more experienced users, who share their experiences and reduce the likelihood of other members of their social networks from becoming victims.

A related area of concern for fraud and financial scams concerns mobile money. Mobile money is intended to facilitate direct transfers: The sender uploads money with an agent who transfers the money, minus a small fee, to the intended recipient who is then able to withdraw the money from a local agent. However, analysis of the study data suggests that these services are not regarded as entirely reliable. In the survey comments, participants made references to 'cheating' service providers and operators. For example, one participant stated, "*mobile money agents cheat, because I lost my money sent in mobile phone without any explanation how the money disappeared in my account*".

In addition to traditional uses of mobile money services for transferring money from one user to another within the country, participants also described an innovative, informal transnational system of money transfer. As described in the previous section, this informal system utilises mobile money services in combination with human intermediary who forms a physical component of the chain by manually transferring the money across the border into neighbouring countries. Participants did not describe experiencing financial scams during these transnational transfers, but it is worth noting that such complex transfers inevitably introduce additional risks compared to a direct transaction. Examining the stages involved in international transfers reveal several potential points at which fraud could occur: The sender uploads money to an intermediary in the same country as the sender, who withdraws the money, removes a portion, makes a currency exchange and then physically crosses the border into the country of the intended recipient where he uploads the money and transfers it on to the final recipient. Although the present study did not collect further data

on these complex transnational transactions, participants' responses indicate that these transfers are commonplace. Further investigation is needed to illuminate associated opportunities and vulnerabilities for crime within these transactions.

6.3.3.3 False information

In addition to the threats and financial scams described in previous sections, the data analysis also revealed that displaced mobile phone owners and users in Uganda experience widespread receipt of false information through calls and SMS. These experiences were reported to be more common than threats and scams, with almost half of survey participants owning or sharing a mobile phone reporting receipt of false information. Examining the narrative data provided by survey participants reveals that false information was more personalised than the generalised scams and threats described. For example, *"I was told on the phone that I lost some relatives, but it was a lie"* and, *"About death of relatives who did not escape with me, and later I realised they are not dead"*. Many participants also described widespread dissemination of rumours and false information with non-specific comments such as, *"There is a lot of false information spread through mobiles"*. FGD participants in Kyangwali described their environment as characterised by a scarcity of information. In Malembo FGD participants explained, *"We get information and news from home from new arrivals to the camp"*, referring to incoming convoys. Others described the use of megaphones by service providers, and few participants reported access to radios. For example, during an interview with the Chairperson of one of the convoys of refugees settled in Kentome village, describing the communications systems within the settlement, he pointed to a hut in the village with a long distance radio mast attached with reeds. He explained,

... this picks up Radio O'icha in Congo. They [the villagers] don't really trust mobile, but they do trust the radio, because there is a lot of false information spread through mobiles. Lots of messages saying a relative needs you, but they are not true...

In the context of widespread misinformation, and in the absence of sources of verification for information received, mobile phones provide a valuable function.

However, the widespread dissemination of false information reduces the reliability of incoming information received through SMS in particular. As one FGD participant in Kisonga explained, mobile phone calls are more reliable, *“for getting a response to your messages, it is two way”*. Other participants in this group expressed agreement with this statement. Another participant in Kisonga explained that he valued his mobile phone as a means, *“to get information from different people and sources to be sure it is correct. I can hear his voice to be sure”*.

The prevalence of false information circulating through mobile networks, in combination with widespread awareness of scams and financial fraud, may also undermine the credibility of other information transmitted through this channel. The quotes provided above illuminate ways in which users may compare information received through mobile phones with other sources and channels to verify its credibility. This may also account for the survey finding indicating that among participants who had previously used a mobile phone for communication during a crisis (n=77), phone calls were used by more than two thirds of the sample, while SMS are used by fewer than 10% (see figure 25).

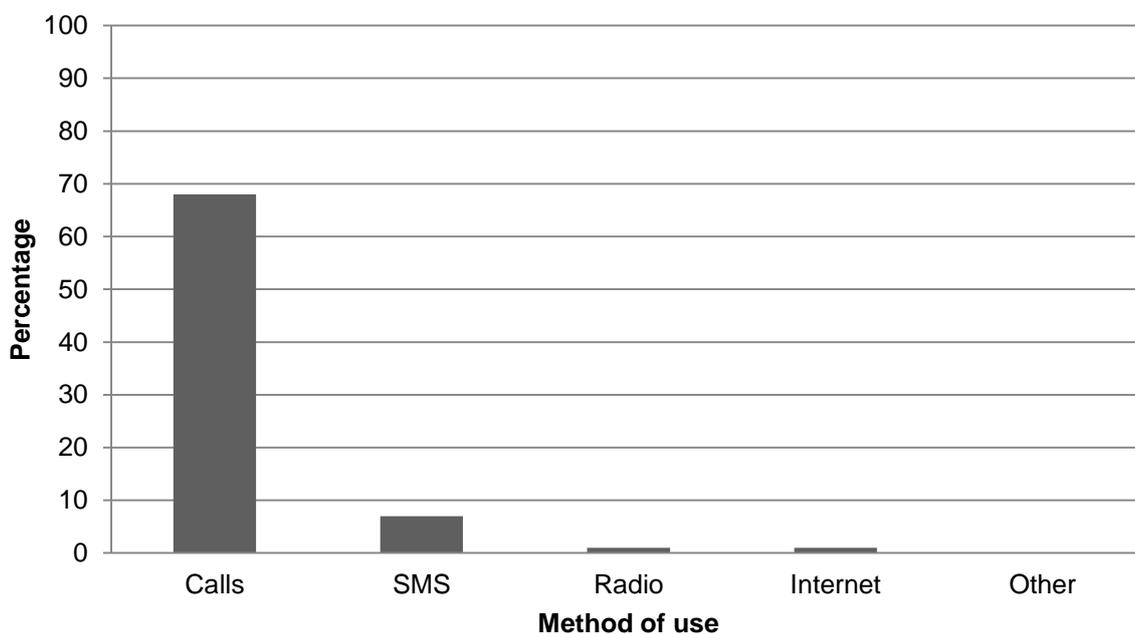


Figure 25: Main usage of mobile telephones during crisis according to survey participants in Uganda

6.3.3.4 Theft of handsets

The final security concern associated with mobile phones identified by study participants in Uganda is handset theft. Although this topic was not directly addressed in the survey (as this study was initially concerned to examine networked mobile phone crimes) the comments section provided participants with an opportunity to introduce any other related (or unrelated in some cases) concerns regarding mobile phones. Six survey participants mentioned the theft of handsets, commenting for example, “*I had a phone when I was in Congo but it was stolen during the crisis*”, “*I had a mobile phone but it was stolen with my handbag two months ago*” and, “*I had a phone in Rwanda but someone cheated me and took it*”. In addition to the comments section of the survey, the topic of handset theft also emerged during the FGD in Kentome. Explaining his reluctance to own a mobile phone, one participant stated,

There is no point to having one anyway, we have to carry it always as it is not safe inside here (gestures at dwellings) and then you can be a victim if someone wants to take it...

Within the settlement, refugees are provided with basic needs: a container for water, cooking utensils, a tarpaulin with which to construct shelters (UNHCR, 2015). Physical security is limited: dwellings cannot be locked, and most residents have no valuable, portable possessions. Mobile phones may therefore represent a valuable crime target, and ownership of a mobile phone may render individuals particularly vulnerable to acquisitive and violent crimes. This is examined in depth in Chapter Seven.

6.3.4 The prevention of mobile phone crime

In addition to examining their perceptions and experiences of the threats and benefits associated with mobile phones, participants in Uganda were also asked about their attitudes to SIM registration and monitoring of mobile phones for the *prevention* of mobile phone crime.

Similar mechanisms are in place in Uganda as in Kenya for the prevention of the misuse of mobile networks, including mandatory SIM card registration introduced on 1st March 2012. There is also reported to be monitoring of mobile communications, although limited information is available about the extent or targets of this monitoring (Uganda Communications Commission, 2012).

The survey did not include questions specifically requesting information about the perpetrators of scams or the sources of false information. Nevertheless, the data revealed interesting findings about participants' attitudes to responsibility for both perpetrating, and preventing, mobile phone crime. Survey participants who attributed a source to the crime and security threats they had received through mobile phones either described these as anonymous or originating from mobile phone operators, except one who attributed the threats to a known source, describing *"threats received from a known person, a relative, over land issues"*.

Mobile network operators were perceived to be responsible for several of the security risks associated with mobile phones in Uganda. Study participants commonly described operators 'cheating', stating for example, *"There is cheating by mobile phone operators - they overcharge calls and sometimes cut your money when you have not made a call"*, and *"Mobile phone service providers deduct our airtime without us using it and when you call customer care, they do not return the money"*. This theme of 'cheating' by mobile phone operators also emerged elsewhere in the survey data. For example, in narrative responses to a question about the experience of mobile phone crime, one survey participant described being informed, *"That I have won money and I went to Hoima, I spent a lot of money and yet it was a lie. It was from Safaricom Kenya"*. While this recipient attributed the fraud to a foreign mobile phone company, other fraudulent messages purported to originate from domestic carriers.

During the FGD in Kisonga this theme also emerged. One male participant commented,

...sometimes they send you a message and it says from Airtel, and you open it and you lose all the money in your account. People are really blaming the operators here for stealing their money

This comment was met with general agreement among members of the group. It appears that some study participants believe mobile network operators to be complicit in perpetrating financial scams targeting refugees, and blame operators for hacking their mobile phone credit accounts.

Recognising the attribution of responsibility to mobile phone operators, attitudes to SIM registration and monitoring were examined through a series of survey questions using a Likert scale range of options. However, responses to the survey questions using Likert scales reveal anomalous results. This is examined in depth in 7.7, proposing that these types of attitude survey may be inappropriate in the locations of data collection, and in developing world contexts characterised by perceived inequalities of power. Furthermore, where the statements proposed opposing views and required participants to agree or disagree with a negative statement (e.g. registration will have *no impact* on crime), it is conceivable that either errors in translation or misunderstanding of the question may further limit the reliability of these data. Furthermore, some of the statements provided in the survey are structured as negatives, for example, “registering SIM cards will have no impact on crime”. These may easily have been mistranslated, and it would be advisable to avoid the use of such negative statements in future studies where translation into multiple languages is anticipated. Acknowledging the limits to the reliability of these data, they are nevertheless presented and examined here.

Survey participants were asked to state their level of agreement with the statement, “Registering SIM cards will have no impact on crime”. Responses to this survey question were divided, as figure 26 shows.

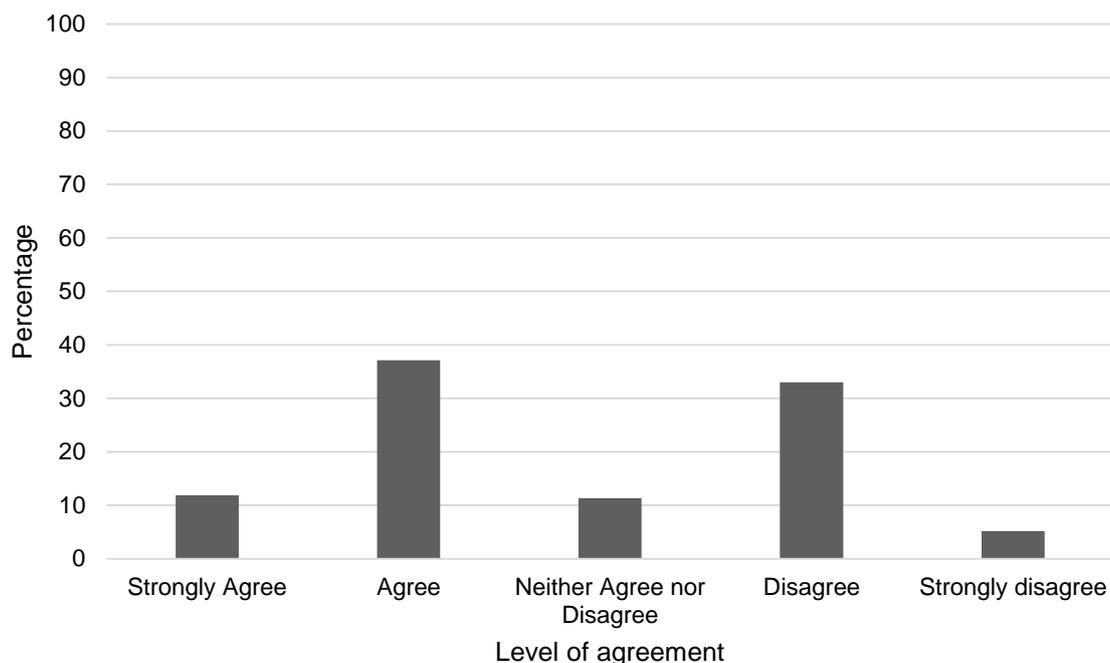


Figure 26: Participant responses to the statement "registering SIM cards will have no impact on crime" in Uganda

More participants agreed with the statement that registering SIM cards would have no impact on crime than disagreed with this statement. No reasons were provided for these attitudes, however, and these data do not provide sufficient information to facilitate detailed analysis. It may be that the wording of the question was not clearly translated, or this finding (which contrasts with the findings showing high levels of support for SIM registration) may reflect cultural inhibitions against expressing disagreement. These issues are discussed in Section 7.7, reflecting on the suitability of the survey questions and the survey tool for this study.

More straightforward questions were asked to assess whether or not participants supported the monitoring of mobile phone communications. These findings reveal high rates of support for monitoring mobile phone networks, indicating that 92% of participants support monitoring while only 6% oppose it, and 2% declined to respond to this question. The FGD data supports this findings, with the majority of FGD participants expressing strong support for monitoring. No objections or concerns were raised during the FGDs, in contrast with Kenya where participants broadly supported monitoring but nevertheless remained concerned about their associated privacy rights.

Participants in Uganda were also asked who they believed should be responsible for preventing the misuse of mobile phone networks. In responses to qualitative survey questions, survey responses indicated that participants viewed operators as best equipped to address mobile crime threats, suggesting that they should support and even finance police operations to prevent and respond to mobile-enabled crime, for example, *“theft of mobile phones should be tracked at no cost, maybe the police should be paid by the company in order to help track for customers freely”*, *“sometimes mobile phone regulators don't help to fight crime - the thugs are smarter”* and, *“mobile phone operators should enhance their ability of tracking lost phones more sufficiently”*. However, examining attitudes to monitoring of mobile networks by the police, the state and by mobile network operators reveals little difference between these entities (see figure 27). While rates of support are high for monitoring by the police, state and MNOs, 61.3% (n=119) of the sample support monitoring by all three. Only ten survey participants in Uganda did not support monitoring by any of these three organisations.

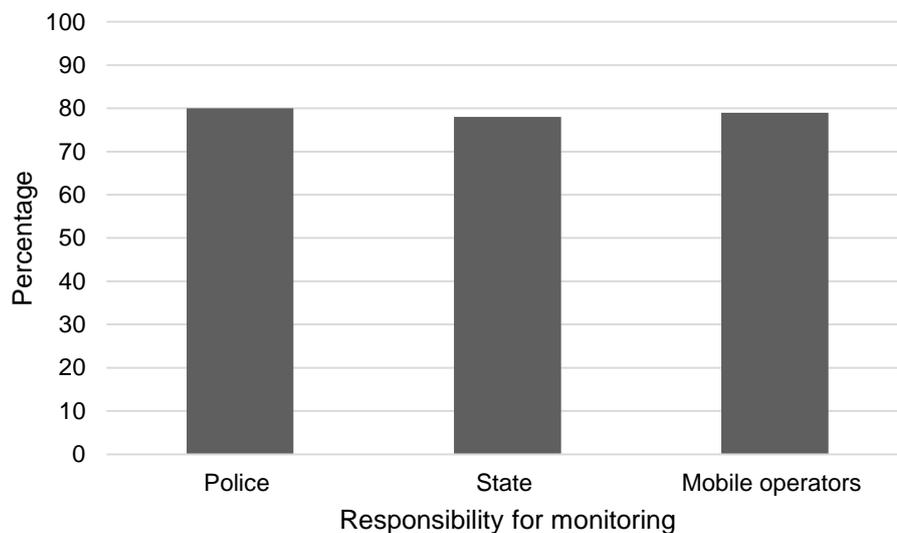


Figure 27: Attitudes to monitoring by the police, the state and by mobile network operators among participants in Uganda

In the comments section, several survey participants also mentioned their opinions on agencies responsible for the prevention of mobile phone crime commenting for example, *“I was threatened via mobile but the police failed to catch the person who was threatening me. There is no security for mobile users by the government”*, *“the state should have a full responsibility to track down people who use their phones for carrying out dubious activities such as money*

frauds and terrorism” and, “the government should do something to help people or stop people who defraud using mobile phones”.

6.4 Conclusion

This chapter presents the background and primary data associated with the second case study investigated in this thesis: Uganda. The first half of the chapter examined the background of the situation of refugees and migrants in Uganda, and addressed the relationship between displacement and mobile telephony. Examining next the study findings, the patterns of mobile phone ownership, use and sharing were examining, reflecting on the data regarding the relationship between these patterns and experiences of crime and crime prevention. Next the specific security benefits identified by study participants were addressed, suggesting that mobile phones are widely valued for enhancing users’ security through connectivity with social networks, providing early warning and response functions and a safety net during emergencies and crises. These data also indicate that formal mechanisms using mobile phones to enhance user security remain limited in scope and are not widely used. Subsequently, the crime and security threats experienced by study participants in Uganda were examined, revealing that many users had received false information, and receipt of threats and financial scams was also common. Support from more experienced users is found to reduce vulnerability to these threats. The security and crime threats associated with mobile telephony were revealed to impact handset owners, users and non-users, with implications for their physical and financial insecurity.

Finally, preventative mechanisms for reducing mobile phone crime in Uganda were investigated, revealing widespread support for the monitoring of mobile networks to prevent their misuse, and mixed attitudes to questions of responsibility for the prevention of mobile-enabled crime.

Chapter Seven: Discussion

7.1 Introduction

Drawing on the background literature and theoretical frameworks presented in previous chapters, in combination with the primary data from the two case studies, this chapter analyses the relationship between mobile phones and opportunities for crime and crime prevention addressing the question,

What are the implications of the increasing penetration of mobile phones in developing world settings for opportunities for crime and its prevention?

Specifically, this thesis presents and defends the argument that mobile phones create crime opportunities by changing the ratio of effort, risk, and reward associated with both the commission of crime, and with its prevention in developing world settings. The aims of the thesis are:

1. Identify the ways in which mobile phones inhibit crime in developing world settings, drawing on opportunity theories of crime;
2. Identify the ways in which mobile phones create opportunities for crime in developing world settings;
3. Identify social, cultural and situational conditions informing access to opportunities for crime and crime prevention associated with mobile phones in developing world settings;
4. Identify, analyse and categorise mobile-phone related crime and security threats across the two case studies;
5. Examine the application of situational crime prevention techniques to the prevention of crime associated with mobile phones, specifically as *crime targets* and *crime facilitators*;
6. Gain methodological insights into the application of opportunity theories of crime and situational crime prevention to mobile phone enabled crime in developing world settings.

First, the chapter examines the ways in which mobile phones inhibit crime in developing world settings. These findings are structured according to conditions which *reduce opportunities* for crime by increasing the effort and risk, reducing the rewards and provocations, and removing excuses.

Secondly, the chapter addresses the crime opportunities associated with the increasing penetration of mobile phones in developing world settings. The conditions which *increase opportunities* for crime are also analysed according to the effort, risk, reward, provocation, excuses framework. Once opportunities for crime and crime prevention have been identified, the social, cultural and situational conditions informing these opportunities in developing world settings are examined.

Next, specific crime threats associated with mobile phones in the two case studies are identified and categorised. While mobile phones are broadly categorised as *crime targets* and *crime facilitators*, recognition of the hybrid nature of these threats, and the ways in which they contribute for opportunities for further crime commission, leads to the proposal of the new term m-crime, and the identification of an exploratory categorisation of specific m-crime threats. Situational techniques are then applied to the prevention of m-crime threats associated with *handset theft* and *crime facilitation*. These are structured according to techniques which increase effort and risk, reduce rewards and provocations, and remove excuses for m-crime.

Finally, the chapter addresses the applicability of opportunity theories of crime to the study of mobile phone related crime in developing world settings. Specifically, the findings suggest that the rapid and widespread penetration of mobile phones in developing world settings has implications for the crime and security of mobile phone owners, users and non-users. Opportunity theories of crime provide useful tools to maximise the crime-inhibiting and security-enhancing benefits of these tools. These approaches also provide frameworks for the development of techniques for the prevention of crime associated with mobile phones, drawing on the findings of the study.

7.2 Mobile phones inhibit crime in developing world settings

The first impacts of mobile telephony to be addressed in this chapter are the security-enhancing, and crime-inhibiting, benefits of these tools. It is widely recognised in the existing literature that mobile phones enable developing world communities to access and utilise their social networks, extending economic and emotional support systems (Abraham, 2007; Aker & Mbiti, 2010; Blumenstock, et al., 2011; Jack & Suri, 2014; Overa, 2006; Souter, et al., 2005;

Tenhunen, 2008), and overcoming geographical barriers and weak infrastructures (Overa, 2006; Rafael, 2003; Rotberg & Aker, 2013). Mobile phone-enabled communications are particularly critical during crises and emergencies, and in conditions of insecurity in both the developed and developing world. Dutton and Nainoa (2002) analyse the transformation in public perceptions of mobile phones as 'lifelines' subsequent to the 9/11 terrorist attacks in the USA. Coyle and Thornton (2007) find similar perceptions among mobile users affected by conflict in Lebanon, and Best (2011) highlights the critical value of mobile phones in conflict-affected countries such as Iraq and Liberia. Particularly in contexts where formal state service provision is weak, studies have lauded the benefits of mobile communications for enabling users to access informal networks of support, and facilitating access to information and resources (Best, 2011; Rafael, 2003; Rotberg & Aker, 2013). The security-enhancing benefits associated with mobile phones are well recognised, particularly during crises and emergencies. The findings of this study provide further evidence for these widely documented benefits. However, their specific implications for crime prevention in developing world settings have not been widely researched. Furthermore, this analysis is unique in characterising these benefits according to the frameworks of SCP, and examining the structures of opportunity through which mobile phones function to enhance user security, and ultimately reduce crime.

Returning to the study findings presented in the preceding chapters, mobile users in both case studies described a spectrum of security benefits associated with the mobile phone ownership and use. These range from facilitating communication with vulnerable family members during times of need, providing access to emergency resources and critical information, and enabling victims of crime to call for assistance from formal and informal sources. Examining these through the frameworks of SCP presented in Chapter Three, mobile phones are found to reduce the opportunities for crime in a range of ways. Specifically, mobile phones;

- Increase the perceived effort of crime;
- Increase the perceived risks of crime;
- Reduce anticipated rewards of crime;
- Reduce provocations that contribute to crime;

- Remove excuses for the commission of crime.

Within each of these broad categories, specific 'opportunity-reducing techniques' (Clarke, 1997) are identified (see table 14 below), and are applied here to investigate and categorise the ways in which the increasing penetration of mobile phones in the developing world inhibits crime. These techniques are elaborated and addressed in full in the subsequent sections.

Table 14: Mechanisms through which mobile phones reduce opportunities for crime in developing world settings

Increase perceived effort	Increase perceived risks	Reduce anticipated rewards	Reduce provocations	Remove excuses
<p>Target hardening</p> <ul style="list-style-type: none"> - Enable users to share information about crime threats - Enable users to triangulate and verify information about crime threats 	<p>Extend guardianship</p> <ul style="list-style-type: none"> - Enhance connectivity to formal and informal security services - Enable users to seek assistance <p>Assist natural surveillance</p> <ul style="list-style-type: none"> - Enable users to warn other potential crime targets - Provide a real-time crime reporting mechanism <p>Reduce anonymity</p> <ul style="list-style-type: none"> - GPS locationing enables tracking and locating of offenders - SIM registration identifies individual users - Camera provides opportunity to photograph suspects - Digital recording function enables user to record audio files for use as evidence <p>Strengthen formal surveillance</p> <ul style="list-style-type: none"> - Fear of monitoring mobile phone content increases perceived risk of detection 	<p>Remove targets</p> <ul style="list-style-type: none"> - Users can store financial assets remotely, removing crime targets from insecure settings 	<p>Reduce emotional arousal</p> <ul style="list-style-type: none"> - Formal mobile enabled platforms can clarify rumours and misinformation, potentially reducing outbreaks of violence <p>Neutralise peer pressure</p> <ul style="list-style-type: none"> - PeaceSMS campaigns counteract incitements to violence 	<p>Post instructions</p> <ul style="list-style-type: none"> - Enable transmission of information about laws, e.g. informing users that hate-speech is illegal <p>Alert conscience</p> <ul style="list-style-type: none"> - Sensitisation and awareness campaigns remind users to behave responsibly

7.2.1 Mobile phones increase the perceived effort of crime

The findings of this study suggest that mobile phones increase the perceived effort associated with the commission of crime in developing world settings. These findings are analysed as examples of *target hardening*. Specifically, mobile phones enable users to share information about crime threats, and to triangulate and verify information received from other sources. These uses function to reduce opportunities for crime, particularly emerging violent crime such as that associated with election violence in Kenya and civil conflict in DRC. These also reduce opportunities for the commission of crimes involving deception, as mobile phones provide a two-way communication mechanism for users to verify or triangulate information received. Mobile phone users, and potentially also their communities, are therefore better able to avoid emerging crime threats.

It is noteworthy that phone calls were found to more effective than SMS in triangulating information, as users are able to verify the identity of the source, and assess the reliability, of incoming information through voice calls.

7.2.2 Mobile phones increase the perceived risk of crime

According to the study findings, the increasing availability and use of mobile phones has broad implications for increasing the perceived risk associated with a range of traditional crimes in resource-poor settings. Study participants often described mobile phones, regardless of their practical applications for preventing and reporting crime, as a *disincentive* to criminals. Mobile phones were found to increase perceptions of risk associated with the commission of a wide range of crimes as they empower potential crime targets to respond and report crime in real time, both through formal and informal channels. Specifically, they are analysed to *extend guardianship* by enabling users to rapidly transmit warnings and information horizontally through social networks, increasing the risk of detection for criminals. For example, participants described receiving and transmitting warnings to friends, family members and neighbours about rebel group movements in DRC and outbreaks of political violence in Kenya.

Mobile phones also *assist natural surveillance*, enabling users to report crime informally to other users, or formally to the police or relevant authorities, increasing the risk of apprehension and punishment for offenders. Study data from Uganda suggests that these networked communications even enabled the transmission of warnings from *within* rebel groups, serving a powerful *natural surveillance* function. Previous studies have described the implications of mobile phones for increasing reporting, and potentially prevention, of a broad range of types of traditional, place-based crime (Klick, et al., 2012; Senarathne Tennakoon & Taras, 2012; Shapiro & Siegel, 2015; Shapiro & Weidmann, 2012). Mobile phones provide users with instant connectivity to police forces, and enable users to report and respond to crime in real-time. Just as Taliban insurgents in Afghanistan fear that mobile phone networks will enable affected populations to report their movements to security forces (Shapiro & Weidmann, 2012), study participants in Kenya report that crime has reduced as a result of the potential reporting capabilities enabled by mobile phones. For example, members of the public who witness a robbery in progress may report the crime to police, describe the perpetrators and their getaway vehicle, and may even be contacted later to provide supporting statements to increase the chance of successful prosecution. Study participants described the value of mobile phones for reporting a wide range of traditional crimes, such outbreaks of violence, sexual assault and robbery; and for increasing the chances of prosecution of offenders. The findings reveal widespread perceptions that these functions, whether or not they are utilised, increase the perceived risk associated with the commission of crime. In these ways, mobile phone-enabled crime reporting may also align with the SCP technique of *enhancing natural surveillance*; they enable users to communicate across horizontal networks, provide early warning information, and communicate about emerging threats, and this is likely to increase the real or perceived risk of detection for potential offenders.

In developing world contexts characterised by information scarcity and poor transportation networks, these tools may provide particularly valuable crime reporting and prevention functions to remote and vulnerable populations, or where few alternatives are available. Previous studies have addressed the benefits of mobile phones in disasters (e.g. Meier, 2011a; Wall & Chery, 2012;

Wall & Robinson, 2008) and in weak states where formal service provision is poor (Best, 2011; Coyle & Thornton, 2007; Rotberg & Aker, 2013). Mobile phone users in this study also described lateral information-sharing and assistance-seeking during natural disasters. For example, users in Uganda described mobile phones providing access to life-saving assistance during a landslide, during floods and in an outbreak of fire.

Evidently, mobile phones can only facilitate formal crime reporting when such reporting mechanisms are available. In both Kenya and Uganda, study participants described formal crime and insecurity reporting mechanisms provided by a range of organisations, including both state and non-state actors. However, in Uganda only 7% of the sample were available of any formal services, including crime reporting mechanisms, using mobile phones. In Kenya, participants described a range of crime reporting and response agencies using mobile phones, include hotlines provided by NGOs and government agencies. Some of these mobile-enabled systems provide on-call emergency assistance, analogous to 999 calls in the UK, albeit with a more limited mandate. These enable users to report particular illegal or anti-social behaviour and call for assistance. Examples include the GBV hotline in Uganda that facilitates user reporting of violence against women, and the UWIANO platform in Kenya that enables users to report outbreaks of political violence as well as digital crimes such as the dissemination hate-speech. The findings suggest that the utility of the available crime reporting mechanisms was constrained by their limited mandates in both contexts. Specifically, the GBV hotline provided by American Refugee Committee in Kyangwali refugee settlement¹⁹ is designed to enable women to report incidents of physical and sexual violence, and for affected women to request assistance. While the intention is laudable, study participants expressed concerns that no alternative mechanisms were available for reporting other types of crime, and women in Kyangwali reported low rates of mobile phone ownership and usage. Furthermore, none of the study participants reported using the GBV hotline service to report gender-related crime. Although it is beyond the scope of the present research to examine gender-based violence in cross-cultural contexts, it

¹⁹ ARC provide a GBV hotline to provide referral and response services to survivors of GBV in Gulu, Kyangwali, Nakivale and Kyaka in Uganda.

is noteworthy that the majority of participants in Kyangwali are Congolese, and violence against women remains common in DRC (Meger, 2011). Marital rape was only criminalised in DRC as recently as 2011 (ibid), and the non-use of the GBV hotline reported by participants may therefore reflect deeper *cultural beliefs regarding what constitutes a crime*, rather than reflecting unwillingness or inability to utilise mobile-enabled crime reporting services in general. This is corroborated by interview data from interviews with service providers responsible for staffing the hotline, who described limited use of the service by women (the intended beneficiaries) and widespread use by men for reporting other types of crime, particularly violence. This suggests that demand for a mobile-enabled crime reporting mechanism is high. Furthermore, this may indicate that cultural factors, as well as technical limitations, logistical constraints and attitudes to formal reporting, inform the low rates of GBV reporting found among study participants. In this context, it may be hypothesised that the GBV hotline is therefore unlikely to reduce incidents of violence against women, but it may increase perceived risks associated with the commission of crime in general if offenders are aware that victims can report crime and call for assistance using this service.

Crime reporting mechanisms were more commonly reported by participants in Kenya than in Uganda. The UWIANO platform, described in Chapter Five, provides a free SMS service to enable citizens to report violence and hate-speech using their mobile phones in Kenya. It also disseminates messages promoting peaceful elections and national unity. The UWIANO platform provides an anonymous service for users to report both mobile-enabled crimes and physical outbreaks of violence, *extending natural surveillance*. Clarke (1997) also describes *enlisting the help of the public* as an effective, non-technical method to strengthen *formal surveillance*, and the UWIANO platform may be analysed as an example of such a surveillance technique.

Mobile phones may also function to *reduce the anonymity* of offenders following the mandatory registration of SIM cards in both countries, thereby increasing opportunities for detection and successful prosecution of crimes committed in both physical and networked environments. This was described by participants in Kenya, in response to widespread reporting of high-profile prosecutions utilising mobile phone records as admissible evidence. It was not described by

participants in Uganda, however. SIM registration and perceptions of monitoring were also widely regarded to have reduced the dissemination of hate-speech, inappropriate and false messages in Kenya, indicative that the reduced anonymity functions to reduce offending.

A further mechanism through which mobile phones were reported to reduce offender anonymity was through the GPS function, regarded by participants to increase potential detection and locating of offenders. This was also described in Kenya but not in Uganda. An example provided by a Kenyan FGD participant was the enhanced capacity of the police to locate child kidnappers, although it is unclear whether such functions are used by Kenyan police service. However, regardless of actual use, the perception that mobile phones increase the visibility of offenders effectively increases the perceived risks associated with the commission of crime, and is therefore likely to reduce offending. These findings suggest that mobile telephony serves to extend both *natural and formal surveillance* (crime reporting) and *guardianship* (crime response), and simultaneously *reduce the anonymity* of offenders; all of which are likely to increase the risk associated with committing crime.

Critically however, despite acknowledging these potential benefits, analysis of the primary data reveals that in both Kenya and Uganda, none of the study participants had reported crime using formal mechanisms such as the UWIANO platform or the GBV hotline, but relied on informal social networks for emergency support. While this was described as a choice by Kenyan FGD participants, in Uganda it is likely to be influenced by the low awareness of formal mechanisms for crime reporting using mobile phones. Thus, although mobile phone users and broader community members recognise that mobile phones have the potential to increase the opportunities for detecting and reporting crime in theory, in practice there are several preconditions that inform their *ability* and *willingness* to utilise mobile phones for crime reporting, as described in section 7.4 of this chapter.

In developing world settings, it is also relevant to note that basic handsets are increasingly supplanted by more advanced models with Internet capabilities, voice recording and camera functions (GSMA, 2014). This is likely to facilitate further anonymity-reducing benefits for the prevention of crime. Specifically,

users will be able to photograph or digitally record evidence of crimes, and access online services to report crime and access assistance.

Situational measures recognise the importance of *perceptions* in the prevention of criminal activities. Media reporting around SIM registration and the associated monitoring of mobile phone communications, while lacking specificity, allude to the detection and prevention of hate-speech that may increase users' *perceptions of the risks* associated with their dissemination, regardless of any real increase in risk. This publicity may therefore have introduced crime-reducing effects without increasing the actual risk associated with using mobile phones to coordinate or commit crime. However, analysis of the data also reveals an interesting corollary of these crime prevention mechanisms aiming to increase detection of crime. In particular, the perception that mobile phone networks are monitored to prevent misuse is reported to have resulted in mobile users regulating their own behaviour. Thus the findings suggest that the increased *perception* of risk associated with mobile phone monitoring is sufficient incentive to catalyse wider behavioural change among the general population.

Examining responses describing behavioural changes associated with attitudes to monitoring are illuminating, as participants describe shifts in anti-social content away from mobile phone networks onto anonymous online platforms and leaflet campaigns. These may reflect evidence of *tactical displacement* (Felson & Clarke, 1998) of hate-speech into other communication channels. Participants in Kenya also described the transmission of hate-speech messages with a 'hidden meaning', that superficially appear neutral but contain veiled threats or carefully worded insults. These may represent examples of offender *adaptation* (Ekblom, 1999). Interestingly, one fifth of Kenyan survey participants acknowledged altering their own mobile phone use habits as a result of the reduced anonymity associated with mobile communications, indicative of wider adaptation by everyday users of these tools. FGD participants also described adjusting their own behaviour to minimise the risk of wrong-doing, such as meeting in person to discuss political views or to organise political activities, or 'taking care' in personal communications. Related patterns of self-censorship have emerged in Ethiopia as a consequence of government monitoring of mobile phone use, according to a Human Rights Watch (2014) report. Thus the

widespread perception that mobile communications are closely monitored appears to have the effect of shifting potentially sensitive content away from mobile networks and onto communication channels viewed as less scrutinised.

7.2.3 Mobile phones reduce the rewards of crime

Within this category of preventative techniques an unexpected finding emerged. This concerns the use of mobile telephony to *remove targets* from insecure environments of acquisitive crimes. Clarke (2007) described the installation of a card reader to reduce theft of donations from a church in Spain as an example of target removal. This is analogous to the use of mobile phone networks to remove financial assets from homes in developing world settings. This was widely reported by FGD participants in Kyangwali settlement in Uganda, and to a lesser extent also by users residing in urban slums in Kenya. Specifically, mobile phone users described the value of mobile phones for providing secure storage of financial assets. Users reported uploading cash savings onto digital m-money services in order to remove these savings from their insecure environments. From the perspective of SCP, m-banking provides these displaced users with a savings facility in the context of physical vulnerability and insecure dwellings. For mobile users living in insecure dwellings, the secure 'virtual' storage facility of m-banking enables users to relocate their savings into less vulnerable digital settings, and simultaneously enhances their own personal security by removing a valuable crime target that they would otherwise be required to secure within their dwelling or on their person. M-banking services are designed to facilitate financial transfers, not to secure savings (see Section 2.3.1). However, this innovative application as virtual storage facilities enables mobile phone users to remove economic assets from unguarded, insecure dwellings, reducing the rewards associated with other types of acquisitive and property crime.

7.2.4 Mobile phones reduce the provocations for committing crime

The category of preventative techniques termed 'reduce provocations' contains techniques aims at reducing or neutralising disputes and frustrations in order to reduce crime that may emerge in response to these strong emotional states. Mobile telephony has been widely associated with the escalation, and de-escalation, of violence in Kenya (CIPEV, 2008; Dercon & Gutiérrez-Romero, 2012; Goldstein & Rotich, 2008; KNCHR, 2006; Osborn, 2008) and elsewhere

(e.g. Bailard, 2015; Pierskalla & Hollenbach, 2013; Warren, 2015), as described in Chapters Five and Two respectively. It follows that mechanisms that can catalyse mobile phones to *reduce or prevent outbreaks of violence* are likely to be effective mechanisms for reducing crime.

In Kenya, mobile telephony is strategically leveraged for crime prevention as a mechanism to reduce the potential for conflict associated with external conditions, such as the peaceSMS campaigns to deflect or diffuse disputes around election periods. Wortley (2001) has argued that certain situational conditions may *induce or prompt* illegal or anti-social behaviour, termed *precipitating factors*. The widespread ethno-political violence experienced in Kenya may be interpreted as such a situational condition. Another way to examine this could be the analogy of 'broken windows', whereby visible manifestations of low-level disorder may create criminogenic conditions that encourage further anti-social and criminal behaviour (Kelling & Coles, 1998). Extending this analogy to mobile networks, the widespread dissemination of hate-speech SMS may represent such a visible manifestation of social disorder, creating criminogenic conditions and contributing to anti-social behaviour such as the widespread violence characterising the 2007-8 post-election period. In geographical settings, Kelling and Coles (1998) suggest enhancing the visibility of police presence using foot patrols. Parallels can be drawn between these foot patrols and the widespread peaceSMS campaigns promulgated in Kenya, designed to provide regular reminders to behave responsibly and associated with calming tensions and reassuring mobile users. Peace SMS may be interpreted as an example of utilising mobile phone networks to reduce the provocations for violence, and the findings suggest that these are widely deployed during election periods. Participants in Kenya described widespread receipt of PeaceSMS, including messages promoting national unity and encouragements to behave in a socially responsible manner, and the majority interpreted these as reassuring. These platforms were also utilised to disseminate clarifications of false information and combat the spread of rumours and 'mischief'. These may be variously interpreted within the categories of *avoid disputes, reduce emotional arousal, and/or neutralise peer pressure*. The findings support the aims of the peaceSMS campaigns, indicating that the dissemination of peaceful content through mobile channels may contribute to a

reduction in violence more broadly. In addition to the peaceSMS campaigns aiming to de-escalate tensions, the introduction of legislation criminalising in Kenya was also reported to effectively reduce the dissemination of hate-speech and reduce the violence associated with these communications.

Extending this argument, it may be postulated that in resource poor settings, mobile phone networks provide a valuable communication mechanism for wider crime prevention efforts. Mobile phones provide a cost-effective means to communicate with populations and transmit accurate information about crime and crime prevention. Just as humanitarian agencies leverage mobile phone tools for the pursuit of humanitarian objectives during crises and emergencies (see Section 2.4.2), security and police forces could use mobile phones to share information about crime with otherwise inaccessible populations.

7.2.5 Mobile phones remove excuses for crime

The final category of prevention techniques that were identified in the study findings is the removal of excuses for crime. It has been noted that when potential offenders are unable to make credible excuses for committing crime, this can effectively reduce offending (Clarke & Homel, 1997). Where rules are unclear or ambiguous, individuals are likely to take advantage of this ambiguity and commit crimes. Several crime prevention mechanisms utilising mobile telephony in Kenya and Uganda may be analysed according to the *remove excuses* category of SCP techniques. These include services (such as components of the UWIANO platform, or the Si Si Ni Amani campaign) reminding users to behave responsibly and obey the law, and those reminding users about what constitutes illegal and anti-social behaviour. Within the 'remove excuses' category, examples of crime prevention mechanism identified may be sub-categorised into those that *alert the conscience* and *assist compliance* of potential offenders. For example, the pro-peace SMS disseminated by organisations in Kenya are designed to alert the conscience of mobile users and remind them to exercise restraint in their communications and actions. These messages encourage national unity, promote peace and remind users that transmitting hate-speech is now illegal.

Furthermore, the perceived effectiveness of these mechanism, which users reported finding reassuring and helpful, may be capitalised to leverage mobile

phone networks for further crime prevention applications. For example, SMS messages disseminating *rule reminders* of new or existing laws could effectively target users who lack access to other forms of ICT and may be unaware of broader legal changes and the implementation of national laws. This could be particularly useful in developing world settings. The scarcity of alternative communication channels renders mobile phones a valuable means for communicating rule reminders with populations, particularly in rural areas. Furthermore, mechanisms disseminating information about new or existing laws through mobile phone networks could also benefit from cultural patterns of information sharing between users and non-users of mobile technology. These sharing practices could potentially increase the range of information transmission beyond primary users of mobile phones.

7.3 Mobile phones create opportunities for crime in developing world settings

Opportunity theories of crime suggest that crime opportunities are created through the patterns of everyday life, and furthermore that social and technological changes are likely to create new opportunities for crime (Ekblom & Tilley, 2000; Farrell, 2015; Laycock, 2004; Newman & Clarke, 2003). In developing world contexts, it is also essential to recognise the importance of social, cultural and situational factors in informing opportunities for crime and crime prevention associated with mobile phones, as summarised in Section 7.4.

In developing settings world it has been predicted that criminals will develop innovative strategies to exploit mobile technology (Livingstone, 2013; Shaw & Reitano, 2013). The study findings suggest that mobile phones facilitate the commission of a wide range of crimes by providing opportunities characterised by low effort, low risk and high reward. Mobile phones enable would-be offenders to maintain physical distance and remain anonymous, while the pool of potential victims is continually expanding with increasing mobile penetration. The increasing opportunities for crime associated with mobile phones may therefore be usefully conceptualised through frameworks of opportunity crime frameworks, particularly RAT (Cohen & Felson, 1979).

7.3.1 Mobile phones reduce the effort of crime

Mobile phones reduce the effort of crime in developing world settings in several ways. The mechanisms through which mobile phones reduce the effort of crime are summarised below.

- i. Increase availability of crime targets.

In resource-poor, developing world settings, personal and home security measures are often weak or absent, and ownership of valuable mobile handsets renders users particularly vulnerable to theft and violent acquisitive crimes. In both the rural villages in Uganda and slums in Kenya where data were collected, it was observed that street lighting was not present and many homes lacked basic security features such as door and window locks. These conditions of poor physical security are likely to reduce the effort associated with the theft of mobile handsets from individuals and dwellings. The increasing ownership of mobile handsets in the developing world is therefore likely to increase the availability of crime targets, in settings where physical security is weak.

- ii. Increase access to victims.

In developing world settings, the widespread availability of mobile phones increases the pool of potential victims accessible by offenders. Mobile telephony has expanded rapidly in developing world settings, as demonstrated in Chapter Two.

Furthermore, the findings suggest that mobile phones do not simply increase access to individual users. In contexts of information scarcity, such as the Kyangwali settlement in Uganda, mobile phone owners were found to be sources of information for entire communities, contributing to both positive and negative outcomes for crime and security. This sharing of information is widely recognised to contribute to positive development and humanitarian outcomes (Wall & Chery, 2012; Wall & Robinson, 2008). However, previous studies generally fail to account for the impact of the sharing of false or misleading information on joint victimisation to crime. In Kyangwali, a group of individuals sharing information received through one mobile handset fell jointly victim to a scam that resulted in them pooling their resources and the subsequent theft of these shared assets. This affected both the individual financial capacity of each

victim, and simultaneously reduced the capacity of the group to provide an informal support network for each other, described in previous studies as 'informal insurance policies' (Aker & Mbiti, 2010; Jack & Suri, 2014). Thus multiple users were victimised through a scam perpetrated through a single handset, with potentially widespread consequences.

- iii. Increase ease of coordination and organisation of crime.

Examining the available literature on the implications of mobile phones in developing world settings, previous studies acknowledge the value of mobile telephony for reducing the effort associated with the organisation and implementation of non-violent collective action. Benefits include enabling users to report news, expose wrongdoing, express opinions, mobilize protests, monitor elections, scrutinize government and deepen participation in political processes (Diamond, 2010; Rheingold, 2002, Rotberg and Aker, 2013). These same functions, according to the findings of this study, contribute to mobile phones increasing opportunities by reducing the effort associated with the commission of crime. In study findings from Kenya and Uganda, users describe less democratic applications of these tools, including widespread transmission of gossip, scams, threats and false information. The viral spread of hate-speech may be examined as a form of (anti-social) collective action, and is a widely publicised phenomenon in the existing literature (CIPEV, 2008; Dercon & Gutierrez-Romero, 2012; Goldstein & Rotich, 2008; KNCHR, 2006; Osborn, 2008). The same features that reduce the effort associated with the organisation of collective action may also render mobile phone networks a low-effort environment for the facilitation of networked and organised crime.

7.3.2 Mobile phones reduce the risk of crime

Mobile phones also reduce the risks associated with committing crimes in developing world settings through the following mechanisms:

- i. Mobile communications enable users to disguise identities.

Potential offenders are able to target victims remotely and disguise their identities, reducing the risk of detection while simultaneously enabling them to pose as trusted individuals or organisations. Many messages identified as scams by participants in both case studies purported to originate from

legitimate, credible sources such as MNOs, with study participants in Uganda frequently referring to 'cheating' and 'stealing' by these organisations. Mobile communications enable criminals to mask their identities or assume false identities, posing as legitimate sources and reducing recipients' ability to assess the credibility of threats. This reduces opportunities for detecting and punishing offenders.

- ii. Mobile communications enable users to conceal the evidence of crime.

Participants in the study described criminals destroying SIMs card after the completion of successful scams in order to conceal the identity of the offender. The temporary link established between victim and perpetrator is easily severed through the destruction of the SIM card and/or mobile handset, therefore reducing the perceived risk of detection and punishment.

7.3.3 Mobile phones increase the rewards of crime

The increasing prevalence of mobile phones in the developing world is associated with increasing the availability of suitable crime targets in contexts of poor physical security, and furthermore these acquisitive crimes facilitate the commission of a wide range of digital crimes. Thus handset theft offers financial rewards, and mobile phones also facilitate other types of crime with both financial and non-financial rewards.

- i. Handsets are valuable crime targets.

The technological 'leapfrogging' phenomenon (Castells, et al., 2007; Sharma & Gillet, 2014) described in Chapter Two creates conditions in which mobile telephones emerge as a uniquely widespread, relatively valuable *crime target*, in contexts where relatively few high-value consumer goods are available (Sidebottom, 2015). The rapid and widespread penetration of mobile telephony in developing world settings may therefore be regarded as analogous to the increase in consumer goods in the post-war period that catalysed increases in rates of acquisitive crime (Cohen & Felson, 1979), in combination with the associated shifts in the patterns of everyday life. Mobile phones are valuable, portable devices and attractive crime targets, both in Western and non-Western settings. They fulfil many of the criteria of the VIVA (Felson, 1998) and

CRAVED (Clarke, 1999) characteristics of 'hot products'. Their increasing prevalence is associated with increasing rates of thefts and robberies across Europe (Farrell, 2015; Harrington & Mayhew, 2001; Mailley, et al., 2008), as described in Chapter Three. In developing world settings, high value consumer goods are rare, and mobile phones are increasingly common. It is therefore likely that mobile phones are likely to be popular crime targets, and that ownership of mobile phones increases vulnerability to robbery, burglary and other acquisitive crime in developing world settings.

Furthermore, it was observed that mobile phones are regarded as prestige items in both Kenya and Uganda, in addition to their practical value as communication tools. Speculating on observations made during the fieldwork, it was notable that many mobile users (particularly in Kyangwali) conspicuously display mobile handsets whilst securing them to their bodies, wearing them on lanyards around their necks like items of jewellery or carrying them openly rather than concealing them in pockets or bags. In contexts where few high value goods are owned, mobile phones may be used to signify the owners' relative wealth and status. However, in insecure environments, conspicuously displayed high-value goods such as mobile phones may increase owners' likelihood of crime victimisation. The study does not address the frequency with which conspicuously displayed handsets are stolen compared to concealed handsets, although future studies could investigate this.

ii. Theft of handsets provides further opportunities for crime.

Emerging frequently in participant responses to open survey questions and during FGD discussions in both Kenya and Uganda, *handset theft* was reported to occur both independently and as a consequence of other crimes facilitated by mobile phones, particularly scams. This interactivity with other types of mobile-facilitated crime is particularly relevant for the present analysis. Specifically, users report being deceived by fraudulent messages encouraging them to travel to isolated or distant locations. Upon arrival, they are attacked and robbed of their mobile phones and other goods. Thus physical and digital vulnerabilities intersect, as mobile phones both *facilitate*, and are *targets* of, traditional types of acquisitive crime. Furthermore, handset theft may *facilitate the commission of other types crime*, such as the acquisition and misuse of the data contained

within the mobile handset. Stolen handsets therefore provide further rewards including access to data contained within the handset and access to other potential crime targets. Motivated offenders can utilise the content of stolen handsets to access personal data stored in these devices, target users' social networks, and potentially access financial resources. Study participants did not describe concerns regarding the theft of data, but potentially the digital storage functions of mobile handsets may introduce new risks for mobile users if handsets are stolen.

Newman and Clarke (2003) have applied the CRAVED characteristics to examine *information* as a hot product within the e-commerce environment. Many of the examples they provide, such as software piracy and counterfeiting, are not relevant for this analysis, but Newman and Clarke (2003) also acknowledge identity theft that targets personal data contained within databases or customer records. Mobile phones in the developing world may also contain personal data which has value as a crime target. Whitehead and Farrell (2008) have also noted threats associated with the theft of user identities and financial information, specifically examining advanced handsets. In developing world settings, related threats may concern data theft from a range of handset types, however, and even basic handsets provide data storage capabilities. Burrell (2010) has noted that the centralisation of personal data associated with mobile handsets is a unique phenomenon in the developing world. Extending this argument, it may be posited that this centralisation of information may create new opportunities for data theft. The participants of this study described using mobile phones for the storage of personal information ranging from personal contacts, documents, images, and music. The data storage opportunities provided by mobile phones were highly valued, even the storage of basic contact information. For example, participants in Uganda reported widespread loss and damage of paper documents as a result of forced migration and extreme weather conditions. Mobile phones enable users to centralise and store important information, and were described as an effective mechanism to overcome the fragility of paper documents in these settings.

Shared (or stolen) handsets may contain valuable data including personally identifying information, PIN codes and passwords, contact details of friends and family members, and may also provide a mechanism for motivated offenders to

assume the identity of the original handset owner. Using the data stored within the handset, and targeting victims who may recognise the telephone number and therefore trust in the identity of the sender, the study findings reveal that these traditional crimes can effectively facilitate the commission of digital crimes. Previous studies have also noted that mobile phones are often used for the secure storage of financial assets by users seeking to conceal savings from other family members, and for financial transfers during emergencies (Blumenstock, et al., 2011; Duncombe, 2012a; Morawczynski, 2009; Morawczynski & Pickens, 2009). Data theft has the potential to be a rewarding type of crime associated with mobile phones in developing world settings.

iii. M-banking may increase the rewards of crime.

The study findings also revealed many security benefits associated with m-banking, which provides users with access to distant and communally-managed resources, such as livestock tended by distant kin and reduces costly, unsafe, and inconvenient journeys to liquidate assets. The benefits identified for migrants are particularly important in light of the increasing centrality of *economic self-reliance* in discourses around refugees and migrants described by Jacobsen (2005) and Omata (2012), and in Uganda study participants valued m-banking, although access to m-banking services was low in Kyangwali settlement. However, the anonymity associated with mobile communications facilitates deception, and the findings of this study suggest that m-banking also provides a mechanism through which criminals can extract resources from their victims. Participants described erroneously transferring money to criminals impersonating a range of legitimate recipients, ranging from friends and family members to network operators. Informal, transnational money transfers such as those described by participants in Uganda may also increase opportunities for victimisation. This informal system is reliant on a trusted intermediary to whom an m-money transfer is sent, and who then withdraws the funds, exchanges the currency, physically crosses an international border and uploads the funds onto a different national m-money service in order to send the transfer on to the intended final recipient. This process creates a chain of opportunities for crime, potentially increasing the vulnerability of sender, recipient, and intermediary. These cultural conditions influence patterns of opportunity for crime associated with mobile phones. Sharing behaviours in particular may either create or inhibit

opportunities for crime, and these complex dynamics deserve further investigation to identify appropriate, culturally-sensitive crime prevention strategies.

iv. Sharing behaviours increase access to rewards.

In contrast to Western settings where individuals own and utilise both handsets and SIM cards independently, previous studies have demonstrated that sharing practices are common in resource-poor developing world settings (Aker & Mbiti, 2010; Burrell, 2010; James, 2011; 2014; James & Vesteege, 2007; Tenhunen, 2008). Macro-level analyses of mobile phone penetration and use figures obscure local practices such as handset and informal resource sharing. These secondary mobile users therefore remain invisible in many academic enquiries, as their usage is embedded within communal level practices. With the exception of Burrell (2010) who notes risks associated with protecting data in shared handsets, the crime and security threats and benefits associated with practices of handset sharing remain largely unacknowledged. However, the findings of this study suggest that an unrecognised corollary of these practices may be unique constellations of opportunity for, and vulnerability to, mobile phone crime differentially affecting owners, users and sharers of handsets. The study findings also suggest that the impacts of mobile-enabled crimes may extend beyond individual users, such as the victimisation of entire communities to mobile-enabled scams facilitated through traditional practices of resource pooling described by participants in Kyangwali. This demonstrates that ownership of a mobile phone is not a necessary precondition for victimisation. Furthermore, in contexts where handset sharing is common (as identified in Kyangwali settlement), mobile handsets may be used as storage devices by multiple users, amplifying the potential risks of data theft. This may be a fruitful area for further study.

7.3.4 Mobile phones provoke crime and remove excuses

Mobile phones may also be analysed to provoke or remove excuses for crime and antisocial behaviour, as mobile phone-enabled communications are not constrained by traditional behavioural norms.

Mobile telephony was also perceived by participants in both case studies to provide new opportunities for socialisation beyond traditional boundaries, as

noted in previous studies (Archambault, 2013; Castells, et al., 2007; Jeffrey & Doron, 2013; Ling, 2004; Porter, 2012; Tenhunen, 2008). For example, in India, Tenhunen (2008) described mobile telephony enabling users to bypass traditional authorities and communicate outside of the bounds of accepted social norms. This enables rural mobile users to access financial support from new sources, and facilitates the coordination of extra-marital affairs. While this enhanced connectivity is often described as a valuable benefit of mobile phones, the findings of this and previous studies reveals that this connectivity may be perceived as a threat to traditional social stability and order. For example, church leaders in Kenya describe the use of mobile phones facilitating the coordination of, and increasing the frequency of, extra-marital affairs, while many participants expressed concern about the identity of the originator of calls received. It may therefore be conjectured that mobile telephony provides low-effort (and low cost) opportunities for users to connect with both personal social networks, and potential offenders. Furthermore, the structure of mobile networks creates novel criminogenic conditions in the developing world that may *provoke criminality* under certain conditions. The anonymity and distance from victims, for example, contrasts with normal social relationships in traditionally close knit communities. In contexts where inter-personal communications are restricted to neighbours and kin networks, mobile phones facilitate access to distant strangers. For example, study participants described making new friends and contacts with whom they share no pre-existing ties. Studies described in Chapter Two demonstrate how mobile phones enable users to access distant networks and to bypass social and economic constraints of their physical environment. Aker and Mbiti (2010) describe how mobile phones enable users to bypass traditional relationships of patronage, Tenhunen (2008) describes increased access to new virtual friends, and Archambault (2013) and Jeffrey and Doron (2013) highlight the risk of social disorder associated with this extension of social ties. This extension of sociality beyond traditional boundaries may reduce the effectiveness of behavioural norms governing inter-personal relations, and potentially provoke anti-social behaviour. In light of this analysis, the dissemination of hate-speech may be analysed as a manifestation of disorder. Receipt of hate-speech may therefore provoke or encourage mobile phone users to further disseminate antisocial or inappropriate content through mobile phone networks.

7.4 Social, cultural and situational conditions inform opportunities for crime and crime prevention

This analysis of opportunities for crime and crime prevention in developing world settings would be incomplete without acknowledging the importance of the social, cultural and situational conditions. These conditions influence structures of opportunity for crime and inform the attitudes and behaviour of developing world populations. Furthermore, they are likely to influence the effectiveness of crime prevention techniques in these settings. Accordingly, this section outlines the conditions identified in the case studies, summarises the ways in which they inform access to opportunities for both crime and crime prevention, and signposts to the section of the thesis where they are discussed in more detail. Inevitably, these comprise an incomplete compendium based on the case studies and fieldwork, but are provided here in recognition of the importance of acknowledging such conditions for studies of crime and crime prevention in developing world settings.

7.4.1 Resource-poor settings

As described in Chapter Two, developing world settings are often characterised by information scarcity, and scholars have noted a connectivity gap, or ‘digital divide’ between populations with access to communications technologies and those without (Castells, et al. 2007; Maitland 1984). In these settings, mobile phones offer valuable communication opportunities for traditionally disconnected populations (Aker & Mbiti, 2010; Castells, et al., 2007; Ling & Horst, 2011; Porter, 2012). A wide range of factors inform access to mobile phones in developing world settings, as addressed in Chapter Two, and it is important to recognise the implications of these conditions for opportunities for crime and crime prevention associated with mobile phones. Specifically:

- i. Resource poor settings are likely to be characterised by different constellations of opportunity for crime.

The previous sections have addressed this topic in depth, but it is important to recognise that developing world settings are likely to be characterised by different crime opportunities. While Mailley et al.’s (2008) *Mobile Phone Theft Index* provides a ranking of theft by handset model in the UK, no such index has been created for handset theft in the developing world. Moreover, in resource-

poor contexts users value particular functionality, and accordingly the popularity of different handset models is likely to be variable. For example, the torch and radio functions were highly valued by study participants, particularly in contexts where cabled electricity is unavailable and access to information is limited. Furthermore, the conditions in which handset theft occurs are likely to differ in developing world settings. The Index developed by Mailley et al. (2008) included snatch-theft, theft from the person, theft from public places, and also burglaries and theft from motor vehicles where mobile handsets were taken. In developing world settings limited data are available on the location of handset thefts, but it may be postulated that they are likely to be different. For example, theft from motor vehicles will be limited where car ownership is low, while weak personal security measures may contribute to increased theft from dwellings. A specific index of mobile phone theft in developing world settings would serve great analytical value for the development of preventative measures. However, Mailley et al.'s (2008) methods used recorded crime data on handset theft, which is unlikely to be available for analysis in many developing world settings, and future studies will need to develop innovative methods to overcome this.

- ii. Information scarcity and 'leapfrogging' contribute to crime opportunities.

Previous studies have argued that inequalities associated with mobile phone ownership and use may maintain and entrench existing inequalities (Abraham, 2009; Duncombe, 2012b; Jagun, et al., 2008; Porter, 2012; Souter, et al., 2005), and these may include inequalities of vulnerability. It follows that vulnerability to the crime and security threats associated with mobile phones is conditional, in part, on users' relative experience with this technology. Mobile phone technology is often described as 'leapfrogging' older communication mechanisms in the developing world (Castells, et al., 2007; Sharma & Gillet, 2014), whereby communications technologies largely bypass other, more regulated forms of electronic media. A corollary of this 'leapfrogging' phenomena for crime and security is that individuals who lack experience with other forms of digital communications (such as television and computing) but have access to personal mobile phone handsets may be less equipped to assess the reliability of the content they receive. Such users may be particularly vulnerable targets for crime. With their previous experience of communication

technologies limited to (formal, regulated) broadcast media, new mobile users in the developing world may be less likely to identify the risks associated with (informal, unregulated) mobile phones and more likely to trust the content they receive through these devices. This 'naïve user hypothesis' suggests that new users are unfamiliar with the risks and have not yet developed a critical approach to analysing the credibility of information received through mobile telephony. The findings of this study suggest that novice users fall victim to mobile scams that more experienced users are better equipped to detect and avoid, particularly financial scams.

- iii. Mobile network coverage informs access to security benefits and creates opportunities for crime.

Fundamentally, network coverage informs users' ability to report and prevent crime using mobile phones. In Kyangwali settlement for example, users reported that poor network coverage²⁰ impeded their ability to call for assistance during emergencies. Where mobile phone coverage is unavailable, communities are not able to benefit from security-enhancing opportunities they provide. Areas lacking coverage may also be strategically utilised by criminals, as Hahn (2012) notes in Burkina Faso. In Hahn's (2012) study, offenders selectively commit crimes (in this case highway robbery) in areas of the countryside where signal coverage is poor to prevent users from reporting crimes or calling for assistance while a robbery is in progress. When used strategically, denying access to mobile networks may effectively *reduce* crime in places (e.g. inhibiting the coordination of violence) and networked crimes (e.g. m-deception). However, as noted in 7.6.3.1, signal jammers strategically employed in crime hotspots such as Kenyan prisons may effectively reduce crime threats associated with mobile phones. In previous studies, selective network blackouts have been utilised to reduce opportunities for terrorist groups and civil activists (Gohdes, 2015; Morozov, 2011; Richtel, 2011; Southwood, 2011; Vodafone, 2011) to organise their activities.

- iv. Access to electricity is a prerequisite for accessing security benefits.

²⁰ The expansion of the settlement was discussed during a subsequent informal discussion with the Chief Executive Officer of MTN, the largest mobile service provider in Uganda. The preliminary findings revealed high demand for mobile communications and m-banking services within the settlement, which prompted the dispatch of a team to conduct a feasibility study.

In developing world settings, particularly rural and resource-constrained environments, the limited availability of power²¹ to charge mobile phone handsets restricts access to crime reporting opportunities. Many of the areas where data were collected in Kenya and Uganda lack mains electricity supplies, and reliance on generators is common in urban areas while solar charging was widespread in rural areas. In Kyangwali settlement limited access to electricity, and the prohibitive costs associated with recharging handsets, were found to limit users' access to mechanisms such as the GBV hotline. A corollary of this for predicting future trends is that the battery life of advanced smartphones is often brief, which may limit uptake of advanced handsets, and associated opportunities for crime, in areas where access to electricity is limited.

- v. Financial constraints inform access to crime prevention benefits, and reduce the detection of crime.

Although addressing widespread issues of poverty and economic inequality are beyond the scope of this thesis, it is noteworthy that mobile phone owners and users must have access to sufficient financial resources to make outgoing calls to report crime. This condition may exclude a body of low-income mobile phone users with disadvantaged patterns of usage, such as those reliant on one-bell techniques (Horst & Miller, 2006) or primarily recipients of calls and messages from high income users (Abraham, 2009). The GBV hotline in Kyangwali settlement provides a call-back service to overcome this constraint, allowing users to 'beep' the hotline to request a phone call.

The ability to make outgoing calls nevertheless informs access to both formal and informal security benefits. Where users are reliant on others to return calls the immediacy of mobile communications is reduced. Furthermore, financially empowered users are in a better position to triangulate incoming information by calling other members of their social network, or verify content with the original sender.

- vi. Insecure settings contribute to crime opportunities.

²¹ Electricity in the settlement is provided by generators in urban centres with limited availability of solar power charging in rural areas.

Where physical security measures are weak and homes and public spaces poorly protected, crime targets are particularly vulnerable. In insecure settings, mobile phones, as CRAVED targets, are likely to both create new opportunities for acquisitive crime (handset theft) and increase associated crime such as burglary and robbery. It is beyond the scope of this study to address all the component of physical insecurity in developing world settings, although it would be an interesting topic for further investigation. Based on observational data from the two periods of fieldwork, street lighting was largely absent and many homes in slums and rural areas lacked window and door locks. The constitution of many homes from natural materials such as leaves, straw and mud is also likely to reduce security, as these barriers may easily be bypassed. In Kyangwali refugee settlement, many homes lacked doors and relied on only a piece of fabric to cover the entrance. In these settings, mobile phones were among the only high value goods observed (see also Section 7.3.1).

- vii. Issues of dependency and addiction to mobile phones may emerge in developing world settings

This study did not set out to address psychological dependency or technological addiction, nor do the methods enable rigorous examination of these issues in the two case studies. However, it is important to acknowledge that unexpected findings emerged in Uganda, and the questions they raise may warrant further investigation by future researchers. These concern mobile phone users' explanations for feelings of insecurity when they do not have access to their mobile phone. As described in 6.3.2.1, one third of survey respondents in Uganda described their feelings in terms of *need* or *addiction*. In the present study, these findings are analysed as examples of the security benefits associated with the mobile phone connectivity. This aligns with the analyses of previous studies addressing the value of mobile phones in emergencies and crises (Coyle & Meier, 2009; ICRC, 2011; IFRC, 2005; Wall & Robinson, 2008; Wall, 2012). However, in Western contexts, mobile phones are increasingly associated with psychological risks such as dependency (Baron, 2010, Baym, 2011), characterised by Baym (2011) as the 'dark side' of mobile phones. To the author's knowledge, in developing world settings these risks have not been widely acknowledged or investigated. Future research could investigate the psychological implications of mobile connectivity in developing world settings,

which may also interact with opportunities for crime and security. This may be a fruitful area of study for psychologists, crime scientists and cognitive anthropologists.

7.4.2 Language, literacy and meaning

Previous studies have demonstrated that education informs mobile phone use, with illiteracy a particular impediment to mobile usage (Aker & Mbiti, 2010; GSMA, 2012; 2014; Tenhunen, 2008). Participants spoke a wide range of languages across the two case studies, and both language and literacy were found to inform their experiences of crime and crime prevention associated with mobile phones. Language is also related to ethnicity, nationality and tribal affiliations.

- i. Language (and ethnicity) informs the interpretation of meaning of received SMS.

The findings suggest that hate-speech and SMS often target particular recipients, containing 'hidden meanings' and veiled threats which are applicable to particular targets and may not be interpreted by speakers of other languages. Thus the same message may have a different meaning for recipients who understand the subtleties of the language in which it is transmitted, or for particular ethnic or political groups who recognise the intended meaning of the message. Legislative crime prevention initiatives in Kenya account for this, requiring MNOs to transmit bulk outgoing messages only in English and Kiswahili (See Section 5.2.2).

- ii. Illiteracy may reduce crime opportunities.

Illiteracy or poor levels of education are widely described as an impediment to mobile phone usage. However, the findings of this study suggest that illiteracy may actually function to *reduce* victimisation and protect users from m- crime threats. Where crime threats are transmitted through SMS rather than telephone calls, or use an unfamiliar language illiterate recipients are unable to comprehend the written content of these messages. This alerts the recipient to the likelihood that the sender is not known to them. Illiterate study participants reported that when receiving SMS, they often assume they are not the intended recipient. This leads them to either disregard the message content, or request

assistance in interpreting it from other members of their community, increasing the chance of more experienced or educated users detecting fraudulent content.

- iii. Distinguishing between hate-speech, humour and political debate is challenging.

The findings demonstrate that mobile phones are used for a wide range of informal communications in developing world settings. Moreover, recipients' interpretation of particular transmissions as offensive, anti-social or illegal depends on many factors, informed by both the content and source of the message and interpretation of the law. Chapter Five introduces the challenges associated with defining hate-speech in Kenya, and Section 5.3.2.1 identifies the challenges associated with researching it in this study, examined further in 7.6.3. Studies investigating crime in developing world settings should recognise the culturally-specific interpretation of appropriate and inappropriate behaviours. In this study, the findings demonstrate that boundaries between humour, political debate and offensive content are blurred. Mobile phones provide users with a mechanism to communicate informally and extend patterns of communication which characterise humour, banter and political debate into digital terrains (Horst, 2006; Spitulnik, 2002). It is important to recognise that the development of appropriate behavioural norms informing digital communications is a cultural as well as a legal process.

7.4.3 Social networks

Social networks are valuable resources for developing world populations to secure resources and access support, as described in Chapter Two. Mobile telephones enhance users' access to social networks, and these also inform opportunities for crime and crime prevention. Furthermore, acknowledging the widely recognised inequalities of access and use between and within demographic and socio-economic groups in developing world settings, opportunities for crime and crime prevention associated with mobile telephony are likely to be unevenly distributed between mobile owners, users and even non-users.

- i. Social networks provide users with informal access to support, but may reduce opportunities for formal crime prevention.

While participants described formal reporting of crime as rare, they described widespread *informal* reporting of crime and security threats. Examples include calling for help during natural disasters such as mudslides and extreme weather conditions, and coordinating escape plans during M23 rebel action in DRC, as described in Chapter Six. Previous studies have lauded these informal benefits, describing for example applications of mobile telephony for coordinating assistance during periods of conflict in Lebanon (Coyle & Thornton, 2007), Liberia and Iraq (Best, 2011) during emergencies in Ghana (Overa, 2006), India (Tenhunen, 2008) and even during 9/11 in the USA (Dutton & Nainoa, 2002). The findings of this study suggest that these benefits are also widely recognised among mobile users in East African settings, indicating that mobile phones facilitate communication and coordination between horizontal support networks, providing users with valuable opportunities to overcome insecurity and weak infrastructure to access informal assistance during crises.

However, this reliance on inter-personal horizontal networks for support in the event of crime or insecurity has both benefits and drawbacks. These informal functions, while they may be effective mechanisms to mobilise assistance for victims of crime, do not function *to increase natural surveillance* and enhance crime reporting to authorities, nor do they *extend the guardianship* of formal security forces or *reduce the anonymity of offenders*. Thus, while participants express satisfaction with, and use of, such informal security-enhancing functions of mobile phones, they are unlikely to contribute to crime reduction through increasing the risks of formal sanctions associated with crime.

In developing world settings, however, formal mechanisms may be unavailable, ineffective or implemented by organisations regarded as untrustworthy, as addressed in 7.4.6.

- ii. Informal information sharing through mobile phones can increase opportunities for crime prevention.

In contexts where information received through mobile phones is shared, as among the Congolese study participants in Kyangwali Settlement, associated security benefits are experienced by wider communities than just handset owners or users. For example, early warning information transmitted through mobile phone calls and SMS was reported to be widely shared and re-

transmitted through word-of-mouth, enabling non-users to access and respond to information during emergencies. However, mobile phone owners are likely to be first to receive such information, and may selectively share information, or delay sharing information, with consequences for other members of their community. Ownership of a mobile phone therefore confers responsibility on developing world users in settings characterised by information scarcity.

According to FGD and survey data, sharing of informal information received through mobile phones enabled communities to access information about impending threats, evade rebel groups, seek assistance, and coordinate escape plans and meeting places with friends and family members in Kenya and Uganda.

- iii. Information sharing can contribute to joint victimisation and increase the impact of false information and scams.

Where false or fraudulent content received through mobile phones is shared with wider community members, this may contribute to joint victimisation and increase the availability of crime targets, as described in 7.3.1.

- iv. Mobile enabled financial transfers may increase opportunities for theft.

Developing world users are often excluded from formal banking services. Mobile-enabled banking offers opportunities for these users to transfer financial assets and securely store savings. However, they also provide opportunities for deception and theft if users are manipulated in transferring funds to criminals, or if criminals are able to access funds by stealing access codes contained in handsets. These risks are also compounded by informal, transnational transfers, as described in section 7.3.3.

7.4.4 Handset sharing

Previous studies recognise that patterns of handset sharing are commonplace in developing world settings (e.g. (Aker & Mbiti, 2010; Burrell, 2010; James, 2011; 2014; James & Vesteg, 2007; Tenhunen, 2008). Burrell (2010) acknowledges the rich and varied patterns of sharing practices in Uganda, distinguishing between different configurations of shared access. Although this type of fine-grained analysis is beyond the scope of the present study, the

findings of this study demonstrate that sharing behaviours introduce complex constellations of opportunity for crime and crime prevention. These are summarised here, and addressed in greater depth in Section 7.2 and 7.3.

- i. Handset sharing may increase the risk of data theft for owners and sharers.

This has been examined in Section 7.3.3, although it was not reported by participants during this study.

- ii. Handset sharing may reduce timely access to security benefits of mobile phones.

Victims of crime must have access to a handset at the critical moment when a crime is in progress or being witnessed, or when they require assistance. This condition may seem simple, yet it is likely to exclude mobile phone users who have only shared access to handsets. Handset owners retain authority and control over their own usage habits, deciding who, when, and where to use their handsets. Secondary users remain reliant on, and subservient to, handset owners who retain ultimate decision-making authority over the handset.

- iii. Handset sharing may reduce the effectiveness of preventative mechanisms e.g. SIM registration and monitoring.

SIM cards must be registered to one individual. Accordingly, where handsets are shared, secondary users become invisible to formal authorities reliant on SIM registration or monitoring.

- iv. Handset sharing may increase the transparency of mobile communications.

Where shared use of a handset occurs among members of a household, for example, this increases the chance of more experienced users detecting false or fraudulent content which may not be recognised by less experienced users. This also reduces the privacy of user communications.

- v. Handset sharers are less vulnerable to handset theft.

Handset sharers may be less vulnerable to handset theft, as they do not retain control of handsets beyond the immediate act of usage. This may further reduce

their vulnerability to associated crimes such as burglary and robbery (Section 7.3.3).

7.4.5 Gender

Previous studies recognise gender disparity in mobile phone access and use in developing world settings (e.g. GSMA, 2012, Porter, 2012). These reflect wider gendered inequalities in developing world settings, which are beyond the scope of this study to address. However, these inequalities of access and use are likely to contribute to women's experiences of crime and crime prevention related to mobile phones. In this study, ownership in urban areas of Kenya were similar for men and women, although women in Uganda reported lower levels of access and use, and higher rates of sharing, than men. Women's reported ownership in Kyangwali settlement was low. The findings indicate that women may and men use mobile phones differently to enhance their security and reduce crime in developing world settings, according to FGD data from Uganda (Section 6.3.2). Moreover, opportunities for crime differ between these groups. Crime prevention mechanisms should be developed which acknowledge and account for these differences in their design and implementation.

- i. Where women's usage is lower, or controlled by men, they have less access to informal security benefits associated with mobile phones.

As noted in 7.4.1 and 7.4.3, access to and ownership of mobile handsets informs access to security benefits.

- ii. Criminals may have less opportunity to target women through mobile phones where women's use rates are lower.

Women's lower rates of mobile phone use may serve to protect them from crime threats transmitted through this medium. Similarly, these conditions may reduce their vulnerability to handset theft.

7.4.6 Attitudes to the state and the law

The findings suggest that attitudes to the police and the state critically inform users' willingness to report crime and the effectiveness of formal crime prevention mechanisms.

- i. Where trust in the state is low, formal crime reporting and prevention mechanisms using mobile phones are likely to be ineffective.

The study findings revealed widespread mistrust in the organs of the state, particularly in Kenya, which inform users' willingness to utilise crime reporting and prevention opportunities associated with mobile phones (see Section 5.3.1). The majority of study participants in Kenya stated that even where mobile reporting mechanisms are available, they do not report crime to the police, nor would they expect them to take action in response to reports of crime received through mobile phone networks. This contrasts with experiences described in Uganda, where participants expressed frustration at the inadequate provision of formal crime reporting and response mechanisms (see Section 6.3.4). Participants in Kenya expressed reluctance to report crime to police, and the FGD data suggests that this is related to widespread mistrust in both the *capacity* and *intentions* of the institutions of the state. Despite the theoretical benefits of connectivity to formal services, participants in Kenya remained sceptical about the effectiveness of reporting crime and expressed distrust in formal security agencies, citing past experiences of ineffectiveness, police corruption and even collusion with perpetrators of violence. This theme also permeates available literature, which has implicated the government and police forces in the coordination and commission of violence against particular ethnic groups during previous election periods (CIPEV, 2008; Dercon & Guittarez-Romero, 2012; Ghoshal, 2011; Rawlence & Albin-Lackey, 2008). Participants widely reported mistrust in, and fear of, security forces.

- ii. Lower rates of crime reporting contribute to weak evidence base of crime in developing world countries.

Low rates of usage of formal crime reporting and prevention mechanisms has implications for research on crime in developing world settings. Poor reporting of crime reduces knowledge about the scale, type, location and timing of crime events. This is likely to reduce opportunities to develop appropriate, evidence-based crime prevention mechanisms. Encouraging users to report crime using mobile phones therefore has broader implications for the evidence-base of crime in developing world settings.

- iii. Developing world users may support crime prevention mechanisms targeting mobile phones even at the cost of personal privacy.

Previous studies have noted with concern the increasing vulnerability of mobile users to formal state surveillance in a range of developing and developed world settings (Diamond, 2010; Human Rights Watch, 2014; Morozov, 2011; Southwood, 2011). These studies have traditionally viewed mobile phone surveillance as a mechanism to facilitate increasing state control and constrain individual freedoms.

Despite participants' expressed mistrust in security forces, an unexpected finding of this study concerns the widespread support for mobile phone monitoring and surveillance by study participants. The reasons provided suggest that participants value community security over individual privacy, and furthermore that individual privacy is conceptually positioned in opposition to social stability and security. This finding emerged in both Kenya and Uganda, and requires further investigation before firm conclusions may be drawn. Section 7.7 reflects on methodological challenges in developing world settings, and proposes suggestions for future research which may be relevant to examine this unexpected finding further. However, preliminary analysis suggests that in contexts characterised by widespread misuse of mobile networks, monitoring and surveillance is viewed by the majority as a liberating mechanism that enables law-abiding mobile users to communicate without fear, rather than an oppressive invasion of privacy. Monitoring and surveillance increase, if not the actual risks associated with perpetrating crimes, at least the *perceived risks*, and are associated with a reduction in criminal and anti-social behaviour across a range of crime types.

It may be posited that the breakdown of social order associated with the viral spread of hate-speech and ensuing outbreaks of political violence during the 2007-8 election period in Kenya contributed to these attitudes towards the control of mobile phone networks as public spaces. This also supports the proposition that mobile phones are becoming aligned with other formal communication channels, rather than viewed as purely private communication devices.

- iv. Leveraging mobile phones for crime prevention depends on both the availability of, and public attitudes to, crime reporting mechanisms.

Following the previous point, the findings also suggest that the mobile network environment can provide user with a mechanism to bypass individual local police officers and stations (associated with the orchestration and perpetration of political violence during previous election periods) and report crime anonymously to state-level security agencies, for example using the UWIANO platform described in Chapter Five. Recognising the historical experiences of the East African region (discussed in Section 5.2), mobile phones may be leveraged to overcome the mistrust between members of the public and security forces. However, study participants in Kenya both expressed reluctance to visit a police station to report crime, and reported low awareness and use of other formal reporting mechanisms (Section 5.3.1.2), although comments during the FGDs indicate that some users value the connectivity to security forces associated with mobile phones. In Uganda, participants also expressed low awareness of formal crime reporting opportunities using mobile phones (Section 6.3.2.3), but they expressed a desire for increased connectivity with formal agencies to report and respond to crime. This may reflect different perceptions of the benevolence of the state among migrants and refugees in Uganda, where the policies of the state towards these groups are widely recognised as progressive (Akellow, 2009; Krause-Vilmar, 2011; Omata, 2012; Omata & Kaplan, 2013).

- v. Legal systems may lag behind emerging crime threats and threats to user privacy.

As the increasing penetration of mobile phones facilitates the commission of new types of crime, legal systems must respond appropriately. This includes drafting laws, for example the response to hate-speech in Kenya which made it illegal to transmit offensive content *in electronic form* (described in Chapter Five). It is also important for developing countries to adopt and enforce appropriate legislation to protect the privacy rights of citizens (Crowe, 2013; Hosein & Nyst, 2013; Hussain, 2013; Munro, 2012; Nyst, 2013). Mobile phones may also provide a valuable mechanism to inform populations about these laws (see Section 7.2.5). Where legal protections are in place and users understand

their rights and responsibilities, this may inhibit crime and simultaneously promote formal crime reporting.

7.5 M-crime: A new crime category

For each of the types of crime identified in this study, mobile phones provide access to new *crime targets* or function as *facilitators*, and both of these applications may contribute to further crime opportunities. The hybrid nature of these threats adds complexity to classificatory schemes that propose exclusive categories. Examining cyber-crime classifications (Wall, 2005), the identified crimes do not fit cyber-crime categories. For example, traditional crimes according to Wall's (2005) model, such as the organisation of violence, often utilise elements of hybrid crimes, such as deception. Furthermore, crimes classified as true cyber-crimes in Wall's model, such as spamming, reportedly occur in both networked environments (e.g. social media) and in real-world settings (e.g. leaflet campaigns). Meanwhile, cyber-crime frameworks do not encompass handset theft, which may facilitate a wide range of networked and traditional crimes. For example, a stolen handset may be used to commit financial fraud or deceive other users whose details are stored in the handset. Deception perpetrated through mobile phone communications may lure victims into vulnerable situations, where they are robbed or beaten. Recognising the hybrid nature of these threats across both networked and situated environments enhances the applicability of situational prevention methods and frameworks, addressed later in this chapter, and facilitates assessment of their interconnectivity with other forms of crime. For example, while the phenomenon of 'hate-speech' was widespread during previous election periods, it is of diminishing concern to users as a direct result of the preventative efforts of public and private sector organisations, which is perceived to have simultaneously reduced other types of crime, while potentially displacing hate-speech into other communication channels.

Recognising the hybrid nature of the crime opportunities associated with mobile phones, it is proposed that mobile phone-enabled crimes, hereafter termed *m-crimes*, form a distinct category of crime that requires specific analysis. The proposal of this term is intended to provide researchers with a common language to address mobile-enabled crime as a distinct conceptual category. Defining the scope of these m-crime threats is a critical prerequisite for the

advancement of this emerging body of knowledge. The category of *m-crime* is therefore proposed to include *any illegal or anti-social activity facilitated or committed using mobile telephony*. Anti-social activities are included in this definition in recognition that many of the m-crime threats identified in this study are not yet subject to legal classification, but are widely perceived to represent anti-social activities negatively affecting the security of mobile phone users. M-crime is distinguished from cyber-crime as it is specifically perpetrated by and through mobile phone networks. The proposed definition of m-crime is purposely inclusive of threats facilitated by, and those committed using, mobile telephony. Many of the types of crime identified in this study bridge virtual and physical settings, and the boundaries of these domains are permeable. M-crime, according to the study findings, may be perpetrated within physical or digital space, or in a combination of the two. Furthermore, m-crime may include both traditional crimes and digital crimes, or a combination of these. The key characteristic that differentiates m-crime from other types of crime is the central function of mobile telephones in creating the structures of opportunity for crime. For example, a crime committed in physical space, such as a robbery, but organised using mobile phone networks, is herein classified as an m-crime. The theft of a mobile handset may facilitate m-crime when the stolen handset is then used for other types of crime, for example the organisation of violence. However, handset theft is not categorised as an m-crime.

Table 15 below provides a categorisation of the identified threats, identifies the crime targets and outlines associated threats.

Table 15: Categorising crime threats, targets and associated crime threats related to mobile phones in developing world settings

Threat	Target	Associated threats
Handset theft	<ul style="list-style-type: none"> • Handset • Owner • Data • Financial 	<ul style="list-style-type: none"> • <i>Robbery</i> of mobile phone owners. • <i>Burglary</i> of owners' homes. • Facilitates other networked crime, e.g. <i>coordination of violence, deception, fraud, etc.</i> • Facilitates <i>theft of data</i> stored within the handset, including contact details of other users, stored documents, passwords etc. • Facilitates <i>access to financial assets</i> through m-banking. • Sharing practices increase the vulnerability of data stored in mobile handsets. • Facilitates deception and the assumption of false identities that in turn facilitate the commission of other types of crime (see below).
M-violence	<ul style="list-style-type: none"> • User • Community 	<ul style="list-style-type: none"> • Organisation of violence and disorder. • Coordination of organised crime, civil conflict and terrorism. • Hate-speech associated with feelings of fear and anxiety: psychological impacts for recipient. • 'Broken windows': generalised manifestations of disorder provoke more crime.
M-theft	<ul style="list-style-type: none"> • Data • User 	<ul style="list-style-type: none"> • M-banking results in the storage of financial assets vulnerable to fraud and scams. • M-banking transactions facilitate rapid financial transfers. • Cross border transactions in which financial assets are physically moved from. one network to another may introduce additional opportunities for crime
M-deception	<ul style="list-style-type: none"> • User • Community 	<ul style="list-style-type: none"> • Users may be manipulated into situations conducive for the commission of other types of crime.

The categories of m-violence, m-theft and m-deception proposed in this framework cannot be regarded as exclusive or bounded, but rather provide a basic scheme for the analysis of the identified threats. Each of these categories of m-crime threat are summarised below.

7.5.1 Handset theft

Handset theft is not classifiable as an m-crime threat, as it is a traditional crime committed in physical settings. However, it is widely recognised by participants to facilitate the commission of a range of m-crimes, discussed subsequently. Handset theft has already been discussed in depth in this chapter, for example in Section 7.3.

7.5.2 M-violence

The term *m-violence* is proposed to categorise m-crimes that facilitate or enable users to commit violence. This broadly includes communications classified as 'hate-speech', which include a range of anti-social and criminal activities ranging from insults and threats to extortions to violence. Past studies have described the widespread circulation of threatening messages, hate-speech, and incitements to violence through radio broadcasts and mobile phone networks, particularly during election periods in Kenya (CIPEV, 2008; Dercon & Gutiérrez-Romero, 2012; Goldstein & Rotich, 2008; KNCHR, 2006; Osborn, 2008). However, in this study the dissemination of threats and incitements to violence was no longer widespread according to study participants. However, a number of challenges were experienced that precluded the rigorous analysis of hate-speech dissemination and receipt during the fieldwork period prior to the 2013 Presidential election, which are addressed in 7.7.

M-violence is also used to categorise the organisation of violence that is widely reported to occur through mobile phone networks. Hate-speech may be interpreted as a manifestation of bullying facilitated by mobile networked-communications, albeit a manifestation with potentially deadly consequences when implicated in outbreaks of violence as has been the case in Kenya. The transmission of false and misleading information may also be interpreted through the lens of psychological harm, but is nevertheless classified here as m-deception. These threats are likely to have distinct characteristics in

developing world settings (see 7.4) that require further investigation by future studies.

The organisation of violence is a related category of crimes associated with mobile phones, and participants described the use of mobile phones for the coordination of insurgency by rebel militias in DRC and for the coordination of ethno-political violence in Kenya. M-violence may be used to classify crimes associated with social unrest, and these functions may be particularly important in contexts of information scarcity. These crimes were primarily committed in combination with elements of cyber-deception and theft.

7.5.3 M-theft

Crimes categorised as m-theft include a range of financial scams, to which participants in Uganda described widespread victimisation. These include sending money in the hope of accessing 'prizes', sending financial support to thieves posing as family members, and being manipulated into meeting fraudsters in nearby towns.

Many crimes involving m-theft these are closely related to the category of m-deception. For example, some cases categorised as m-deception were associated with theft and direct physical violence. Specifically, mobile users in Kyangwali settlement described being lured into vulnerable locations under the guise of collecting prizes, and subsequently being beaten and robbed of mobile handsets and other valuables. In this context, mobile telephony served as a mechanism for manipulating victims into physically vulnerable conditions to facilitate handset theft and other acquisitive and violent crimes.

M-theft may occur as a consequence of, or a motivation for, handset theft. For example, the theft of data stored within the handset, which may facilitate access to m-banking services but also information such as users' social networks, stored documents and photographs. Practices of handset sharing also compound the threat of m-theft. Several comments regarding 'disappearing' mobile credit may reflect examples of hacking, and sharing also informs the risks associated with data theft (see 7.4.4), which could also be analysed as m-theft.

7.5.4 M-deception

Threats classified as *m-deception* comprise a wide range of threats that entail components of *deception*. Analysis of the study findings suggests that mobile phones were perceived to provide a mechanism through which false information is widely disseminated. In Uganda, this commonly included intentional misinformation about the death of family members (see Section 6.3.3.3). In Kenya, FGD participants and interviewees described widespread dissemination of false rumours, for example about nearby massacres, which recipients interpreted as intending to escalate tensions and incite violent responses and counter-attacks from recipients during the 2007-8 election period (See section 5.3.2.1). Study participants in Kenya and Uganda describe the widespread transmission of false information and the use of false identities using mobile phones. These include financial scams (categorised as m-theft) intended to extract resources from mobile users, and even their families and wider communities, and also the transmission of false information widely described as 'mischief' which may also encompass components of m-violence and m-theft.

7.6 The prevention of handset theft and m-crime in developing world settings

In the previous sections of this chapter, specific crime-inhibiting and crime-facilitating opportunities associated with mobile phones in developing world settings have been identified. Social, cultural and situational conditions informing these opportunities have been examined, and crime threats categorised. The present section explores the application of the effort, risk, reward model and the 25 SCP techniques (Cornish and Clarke, 2003) to examine existing crime prevention techniques, and to identify suitable new techniques to prevent handset theft and the use of mobile phones as crime facilitators in developing world settings. The applicability of the opportunity reducing techniques characterising IN SAFE HANDS (Whitehead et al., 2008) are also examined in relation to the prevention of handset theft.

Having previously used SCP to *analyse the ways in which mobile phones contribute to the inhibition of crime*, it is here applied to *identify mechanisms that may inhibit m-crime*. These preventative mechanisms aim to address the theft of handsets (mobile phones as *crime targets*) and m-crime (mobile phones

as *crime facilitators*) affecting mobile phone owners, users and their communities in developing world settings.

7.6.1 Situational prevention of handset theft in developing world settings

A range of preventative mechanisms designed to reduce opportunities for mobile handset theft were addressed in Chapter Three. In the present section, the focus concerns specific techniques which may be appropriate in developing world settings, with reference to the identified social, cultural and situational conditions informing crime opportunities. Table 16 (below) outlines the techniques which may be applied to reduce handset theft in developing world settings, according to the findings of this study.

Table 16: Preliminary application of the 25 techniques to reduce opportunities for handset theft in developing world settings

Increase perceived effort	Increase perceived risks	Reduce anticipated rewards	Reduce provocations	Remove excuses
<p>Target harden - Increase security of public spaces e.g. street lighting (Cornish & Clarke 2003) - Increase security of individual homes e.g. install secure storage areas in dwellings, door and window locks (Cornish & Clarke 2003) - use of lanyards to secure handset to user (Whitehead et al., 2008)</p> <p>Conceal targets - use of lanyards beneath clothing (Whitehead et al., 2008) -discourage conspicuous display of handsets (Whitehead et al., 2008) - Promote safe pockets (Whitehead et al., 2008)</p>	<p>Reduce anonymity - Track lost and stolen mobiles (Whitehead et al., 2008)</p>	<p>Identify property - Handset marking (DiLondardo & Clarke, 1986; Farrell, 2015) - Component marking (Kaplan et al., 2008) - Encourage users to register IMEI numbers (Farrell, 2015)</p> <p>Disrupt markets - Regulate markets (Sutton & Simmonds, 2004) - Encourage vendors to register handsets' IMEI numbers where possible (Farrell, 2015)</p> <p>Deny benefits - Blacklist stolen handsets (Mailley, et al., 2006; Mailley, 2011) - Remote locking and airtime recovery (Farrell, 2015) - PIN or password protect handsets (Farrell, 2015)</p>	<p>Neutralise peer pressure - PeaceSMS campaigns</p>	<p>Post instructions - Clear legal frameworks for punishment of offenders - Educate the public not to buy stolen handsets (Sutton & Simmonds, 2004)</p>

Examining the techniques in table 16 in further detail, *increasing the effort* associated with the commission acquisitive crimes in spatial locations is a traditional crime challenge, and one that may be addressed through a range of place-based methods. Both the background literature and primary data collected from the two case studies reveal mechanisms that are currently employed by mobile users and public and private agencies to increase the effort associated with mobile handset theft. These primarily comprise physical measures designed to harden particular targets and deflect known offenders. *Target hardening* measures aim to introduce physical barriers to increase the effort associated with accessing a particular crime target, and are particularly applicable to preventing mobile handset theft in developing world conditions. For example, in Uganda mobile phone owners widely employed the simple, low-cost security measure of using lanyards. Lanyards were observed to be used in two ways. Some wearers displayed their mobile phone conspicuously on the exterior of their clothing, with mobile phones worn like an item of jewellery. Other mobile phone owners were observed to conceal the handset beneath clothing, with the lanyard securing the device to their person. This may be also analysed as a method of *concealing targets*, aiming to reduce the rewards of crime. *Target harden* may also provide an approach to effectively prevent the *theft of data* stored within mobile phone handsets, a particular issue described in Uganda among sharers of mobile handsets, and in Burrell's (2010) study also conducted in Uganda. Encouraging or educating users on PIN or password protecting handsets may also potentially *deny benefits* or *increase the effort* associated with accessing user data on these devices, although the majority of mobile handsets owned and used by study participants are basic models without these security functions.

The installation of secure storage areas for mobile devices within individual dwellings may be a further effective means to reduce handset theft from dwellings. However, such measures will only enhance the security of handsets within particular physical environments, and do not guard against handset theft beyond the threshold of individual homes. Furthermore, the temporary nature of many dwellings in rural areas of Africa may prevent the installation of secure storage. For example, dwellings in Kyangwali are comprised of local materials such as grass, mud and tarpaulins, and in the low-income areas of Nairobi and

Kampala the houses are built from mud bricks and sheet metal roofing. These materials provide easy access to criminals who may enter through walls or ceilings, even if doors and windows are secured. Within wider environments, other situational measures may be implemented to increase the effort associated with this acquisitive crime. For example, increasing the provision of street lighting may reduce the rates of robbery and handset theft (Cornish & Clarke 2003). No information was collected on the specific locations of handset thefts, however, which is an essential prerequisite for the development of such location-based target hardening measures. Further studies could investigate handset theft in developing world settings to identify specific situational vulnerabilities across contexts.

Techniques which reduce the anonymity of offenders may also be effective ways to increase the risk associated with handset theft, such as remote tracking of offenders to facilitate apprehension and recovery of stolen goods. Although Kenyan study participants acknowledged that such techniques are theoretically possible, they were doubtful that police forces in Kenya would be able to access the necessary technology or skills to utilise such methods of crime prevention. SIM registration should facilitate access to information about the registered owners of SIM cards (although this technique will not help to identify shared users of SIM cards, nor SIM cards which have been re-sold) but would require timely and effective collaboration between MNOs and police forces to utilise this information to respond to reported crime, and handset theft is not likely to be regarded as a serious enough crime to justify the necessary use of resources. It is not clear whether potential offenders regard this as increasing the risk, and the findings from study participants are mixed.

Several further methods were identified in Chapter Three which have been fruitfully applied in Western settings, and which could effectively reduce mobile handset theft in developing world contexts. These include handset marking and registration of IMEI numbers to *identify property* (Farrell, 2015). Encouraging users to register the IMEI numbers of stolen handsets may *disrupt markets* (ibid.), but only where traders are willing and able to access remote databases to verify the status of handsets (Sutton & Simmonds, 2004). However, measures proposed by Kaplankiran et al. (2008) such as calling on the police, vendors or potential customers to verify the IMEI against a registry of stolen

phone identities. In contexts where access to the internet is limited, crime reporting may be rare, vendors largely unregulated and awareness among customers low, this is unlikely to occur. Furthermore, blacklisting across networks would require international cooperation. Kaplankiran et al. also suggest random spot checks of users carrying stolen goods “to incentivize both sellers and customers to avoid stolen mobiles” (2008, p277). However, as registering IMEI numbers is a prerequisite of blacklisting, and several challenges have been identified which prevent this in developing world settings, such approaches are unlikely to be effective in these contexts. In developing world settings, particularly resource-poor rural areas, these are unlikely to be a feasible approach to crime prevention. Furthermore, little is known about the extent of IMEI reprogramming in developing world settings. In the UK, Kaplankiran et al. (2008) estimate that around 5% of handsets may be reprogrammed in the UK. If it is as widespread in developing world settings, preventing such reprogramming is a potential means for reducing handset theft. However, if IMEI numbers are not widely registered in developing world settings, reprogramming may not be a crime challenge in these settings.

Remote locking and airtime recovery are other potential techniques which may reduce the rewards associated with handset theft (ibid), and would require involvement by MNOs. The feasibility of these approaches should be further investigated.

Encouraging users to PIN or password protect handsets is a simple, non-technical way to protect the data contained within handsets, although it may not prevent criminals from re-formatting and re-selling the handset. However, some basic handsets do not provide locking opportunities, and furthermore in contexts where sharing is common, passwords and PIN numbers may be known by several individuals, potentially reducing the effectiveness of these techniques. However, as advanced models become more widely available in developing world settings, and are used to store valuable personal data, PIN and password protecting handsets may be increasingly important to protect user data.

No measures have been identified during this study to reduce provocations associated with handset theft. However, raising awareness of the

consequences and legal sanctions applicable to handset thieves may effectively *remove excuses* for this type of crime, and reduce its prevalence.

7.6.2 Applying IN SAFE HANDS prevention strategies to mobile phone theft in developing world settings

The IN SAFE HANDS characteristics are not applied to m-crime directly in this thesis. However, as noted, preventing handset theft may have implications for the reduction of m-crimes facilitated by stolen handsets.

Applying the IN SAFE HANDS characteristics of secure designs (Whitehead et al., 2008) to mobile phone theft in developing world settings, the findings from Kenya and Uganda suggest that many of these characteristics may be meaningfully applied in these settings. Moreover, the primary data indicates that developing world users are already applying some of these techniques to address handset theft. Specifically, lanyards are used to secure handsets to users (the *attached* characteristic), and many users conceal devices (the *hidden* characteristic). However, the findings also show that attitudes to mobile phones as prestige goods leads some users to conspicuously display them, which may increase opportunities for theft. This suggests that encouraging concealment of handsets could reduce handset theft among developing world users. However, as the majority of developing world users use basic handsets, many of the built-in anti-theft designs developed by the industry (*automatic* characteristics of secure designs), and options such as remote deactivation of stolen handsets (*executable* and *necessary* characteristics) are not widely available to these users. Less technical options addressing *executable* characteristics are also proposed by Whitehead et al. (2008) such as *text bombing*; bombarding stole phones with a stream of messages which prevents normal use (Harrington & Mayhew, 2001). This method may be effective in developing world settings, although it is reliant on users' reporting stolen handsets, and on the involvement of MNOs in crime prevention.

Crime prevention options which use widely available materials, can be implemented at low-cost and are user-friendly and non-technical are likely to be more effective in developing world settings than sophisticated expensive solutions. For example characteristics which make mobile phones more *findable* include technical solutions such as tracking stolen handsets, and also simple

solutions such as calling the handset. Simply calling a stolen handset is likely to be a more widely available option for most users developing world settings.

Table 17 below examines the applicability of Whitehead et al.'s (2008) characteristics of secure designs to mobile phones in developing world settings. This table includes primarily existing measures, excluding measures proposed by Whitehead et al. (2008) which comprise technological innovations beyond the scope of the present study, and which have limited relevance in resource-poor settings among users' with low technical capacity.

Table 17: Application of IN SAFE HANDS characteristics of secure design, drawing on Whitehead et al. (2008, p42) to mobile handset theft in developing world settings

Characteristic	Suggested anti-theft solutions	Applicability in developing world settings
Identifiable	Products should be identifiable by their owner. a) Simple property marking b) Ultra-violet marking c) Microdots d) Unique soluble markets e) Identify-and-return labels f) Permanently personalised handset	Simple property marking and identify-and-return labels could be effective. However, in resource-poor settings some options unlikely to be widely available, e.g. UV marking, microdots, soluble markers, etc.
Neutral	Anti-theft design features should not adversely affect users' experiences (e.g. more difficult to use, other adverse consequences).	Advisable particularly where handset owners are poorly educated, non-literate or have low levels of technical ability. It is also important to research specific adverse consequences which may occur in developing world settings.
Seen (to be protected)	Promote deterrence by increasing perceived risk.	See Section 7.6.1 and 6.3.2 for specific mechanisms of increasing risks of m-crime.
Attached	Spatially or electronically attach product to the desired location or owner. a) Attachment to the individual b) Fixed location handsets c) Temporary location-based fixtures	Lanyards widely used in high risk settings e.g. Kyangwali Refugee Settlement. Where handsets are shared, encouraging users to use fixed-location handsets may reduce the risk of handset theft but decrease privacy for

	d) Bespoke secure clothing and carry pouches	sharers, with associated security concerns for this group. Temporary location based fixtures may provide an effective compromise. Promotion of safe pockets and wallets offers low-cost, implementable solution to reduce theft where tailoring of clothes is commonplace.
Findable	If lost or stolen, the product can be tracked or found. a) GSM tracking b) GPS tracking	Basic handsets have no built-in tracking functionality, and smart phones are not widely used. Police capacity to track using GPS is limited, compounded by low rates of reporting. Calling stolen handsets provides a realistic option with limited effectiveness.
Executable	The product can be deactivated remotely. a) SIM blocking and IMEI-blacklisting of stolen phones b) Designing legislation to discourage reprogramming c) Text bombing	SIM registration provides a range of options for remote SIM blocking. However, stolen handsets may not widely reported to police where security forces are not trusted. Text bombing may also be ineffective in contexts where mobile phone users are accustomed to receiving dozens and even hundreds of spam messages each day.
Hidden	The product is hidden and not used conspicuously. a) Pockets or purses	Some users conceal handsets, others conspicuously display them. Numerous users were observed using mobile phones in public places and on public transportation.
Automatic	Protection is built-in, the default option, or automated.	Built-in, automated protection e.g. PIN codes are not widely available on basic handsets.

	<ul style="list-style-type: none"> a) Inbuilt key codes b) Biometrics 	Other expensive or technical solutions unlikely to widely available, e.g. biometrics.
Necessary	<p>Information possessed by the owner is necessary to use the handset</p> <ul style="list-style-type: none"> a) PIN codes, passwords b) Biometric identification 	Basic handsets common in developing world settings do not widely use PIN codes, biometric identification, etc.
Detectable	<p>Tamper-proof design makes it obvious when handset is stolen</p> <ul style="list-style-type: none"> a) Noisy bags 	Expensive and technical solutions, e.g. inbuilt anti-theft alarms, are unlikely to be accessible to most developing world users.
Secure	Protection should not be easily removable or hackable.	

Whitehead et al. (2008) note the variability of their proposed design solutions, including both cheap, simple solutions and expensive and sophisticated ones. They also note that some require 'universal' application while others may be tailored to user needs on an ad hoc basis, and recognise that, "Some of the designs may have implications for legislation, policing, the practices of phone users, or for handset manufacturers or network providers" (Whitehead et al., 2008, p 41). It is important to acknowledge the differences between the capacities of these stakeholders in Western and developing world settings, and between users' attitudes to these different bodies which may inform their willingness to involve them in crime prevention. Users' capacities are also likely to be informed by the social, cultural and situational conditions and contexts, addressed in Section 7.4. Where education and literacy rates are low, for example, mobile phone users cannot reasonably be expected to utilise security features which are provided as options in the settings of their device; automatic, built-in measures, or physical security techniques, are likely to be more appropriate. Where public trust in the intuitions of the state is low, particularly police and security forces, it may be anticipated that formal crime reporting to these agencies may be low. In such contexts, it may be more appropriate for MNOs (or other neutral organisations, perhaps NGOs) to collaborate with police and provide crime reporting services for mobile phone users, feeding this information back to police and formal security agencies of the state.

7.6.3 Preventing the use of mobile phones as crime facilitators

Examining next techniques aiming to reduce the use of mobile phones for *facilitating crime*, the majority of existing techniques identified in Kenya and Uganda aim to *increase risks* associated with m-crime. In Kenya, many of these are perceived to have emerged in response to the widespread transmission of hate-speech through mobile phone networks, although they are reported to have a wider *diffusion of benefits* effect, effectively reducing a range of m-crimes. Other measures that aim to *increase effort*, *reduce rewards* and *remove excuses* are also examined here.

The table below outlines the techniques which may be applied to reduce the use of mobile phones as *crime facilitators* in developing world settings. As noted

previously, due to the hybrid nature of these threats, the situational techniques identified to reduce handset theft also have relevance for reducing the use of mobile phones as crime facilitators.

Table 18: Preliminary application of the 25 techniques to reduce the use of mobile phones as crime facilitators in developing world settings

Increase perceived effort	Increase perceived risks	Reduce anticipated rewards	Reduce provocations	Remove excuses
<p>Target Harden - Automated techniques such as: - Phishing filters - Firewalls</p> <p>Deflect offenders - Block mobile signals in crime hotspots (e.g. prisons)</p> <p>Control tools - Control access to handsets (e.g. in prisons)</p>	<p>Extend guardianship - Regulation of bulk SMS - Remote tracking of offenders</p> <p>Assist natural surveillance - Provide informal m-crime reporting services - Reward vigilance - Educate users</p> <p>Reduce anonymity - Utilise caller-ID function - Encourage authentication by users - SIM Registration</p> <p>Utilise place managers - Encourage action by MNO anti-fraud teams</p> <p>Strengthen formal surveillance - regulation of bulk SMS - Monitoring systems e.g. keyword searches for violent or criminal content -M-crime reporting services</p>	<p>Deny benefits - Fix identified vulnerabilities</p>	<p>Neutralise peer pressure - Prevention of m-crime campaigns</p>	<p>Set rules - Legal contract for SIM establishing obligations of users</p> <p>Post instructions - Clear legal frameworks - encourage community leaders to share information with communities</p> <p>Alert conscience - Sensitisation campaigns about the wider impacts of m-crime on society - Publicise prosecutions of offenders</p>

7.6.3.1 Increase the effort

A key feature of m-crime is that it may be committed by offenders physically distant from the location of their victims, and mobile phone networks provide a low-effort, low-cost mechanism through which motivated offenders may interact with potential crime targets. This presents a challenge for measures that aim to *increase the effort* associated with committing m-crime. However, situational measures designed to *deflect offenders* can be implemented when the location of perpetrators is known. For example, in Kenya many study participants attributed fraudulent SMS to incarcerated convicts in local prisons. In 2011, an investigation conducted by mobile operator Safaricom²² substantiated this assumption, finding evidence that over 70% of fraudulent messages sent through mobile networks originate in prisons. As a consequence of this study, Safaricom signed a Memorandum of Understanding (MoU) with the Kenya Prisons Service for the installation of signal blocking equipment in Kenyan prisons with the aim of reducing prisoner's access to mobile networks. This mechanism was intended to prevent this body of motivated offenders from disseminating fraudulent and threatening calls and messages, and reducing their capacity to organise criminal activities in general (Karanja 2011, Okuttah 2011). Although no reliable statistical evidence is available to substantiate the effectiveness of this SCP mechanism, according to study participants this resulted in a considerable reduction in the receipt of hate-speech, and received widespread public support. In this example, the introduction of a physically situated prevention mechanism in an identified hotspot was reported to reduce the perpetration of m-crimes and antisocial behaviour across mobile networks, creating a broad crime prevention impact.

Similar targeted approaches reducing mobile signal coverage in crime hotspots have been described in previous studies. For example, the suspension of mobile phone networks in conflict zones (Shapiro and Weidmann, 2012; Vodafone, 2011) has been associated with reductions in the perpetration of violent attacks. However, such broad preventative mechanisms (jamming signals across entire communities) are simultaneously likely to reduce the

²² Safaricom is a prominent mobile operator in Kenya

security benefits associated with mobile phones. Specifically, they may prevent mobile phone users from reporting crime or calling for assistance. Furthermore, the strategic use of network blackouts is generally associated with repressive state regimes (see Section 2.4.3), and implementing such techniques more widely than the controlled environment of a prison is not a feasible crime prevention technique in a democratic regime. Thus the identification and targeting of particular crime hotspots must be approached with caution in order to reduce the crime-facilitating opportunities provided by mobile phone without undermining its crime inhibiting potential, or undermining the rights of users.

Other technical solutions such as *hardening targets* through implementing phishing filters or firewalls may be an effective measure to reduce m-crime threats, and have been effectively applied to reduce e-commerce crime (Newman & Clarke, 2003). These techniques may be effective in developing world settings if they are automated, but they are reliant on industry-level action to implement, which in turn is likely to require legislative action. Responsibility for implementing such prevention mechanisms is discussed in Section 7.6.4.

Accepting that mobile phones are the tool through which m-crimes are facilitated, the category of *control tools* is relevant here, and has wider implications for the reduction of other forms of crime facilitated through mobile phones. However, mechanisms aiming to control tools, such as SIM card registration, simultaneously function to achieve other SCP techniques, such as increasing the risk associated with committing m-crime. Recognising that the boundaries between the preventative techniques are not fixed and mechanisms may be situated in more than one category, these measures are therefore analysed in the most relevant sections according to the mechanisms through which they reduce crime.

7.6.3.2 Increase the risk

Measures which increase the risk of mobile phone were found to be the most widespread, and were widely perceived to be effective at reducing crime. These measures correlate with SCP techniques designed to *increase risk; extend guardianship, assist natural surveillance, reduce anonymity, utilise place managers and strengthen formal surveillance*.

In the mobile network terrain, the personalised nature of communications precludes the application of crime prevention techniques that *extend guardianship* in the way, for example, a Neighbourhood Watch scheme may function to protect a physical space. However, in response to the misuse of mobile networks and the bulk transmission of inappropriate content, legal reform in Kenya now requires mobile network operators to review the content of bulk SMS prior to broadcasting (CCK, 2012). According to study participants, this measure has garnered widespread support from the general public, and has increased perceptions of risk associated with the transmission of anti-social content. Accordingly, it may be regarded as an example of the application of the *guardianship principle* by mobile network operators; increasing the chances of detection, and potentially prosecution, of offenders. *Remote tracking* of offenders is also a potential technique which could be implemented by MNOs, but would require considerable collaboration with law enforcement authorities, and would also require users to report crime to police.

M-crime reporting platforms, such as UWIANO described previously, provide users with m-crime reporting opportunities and may be categorised as SCP measures that *assist natural surveillance*, encouraging the vast and increasing body of mobile network users to report m-crime. These have already been discussed in terms of increasing the risk of a range of traditional crimes, such as organised violence, and may also be utilised to increase reporting of specific networked crimes. Where these warning mechanisms are associated with an effective response component, they may effectively increase the risk and thereby reduce m-crime. As noted previously, these are only likely to be effective in contexts where victims of crime have both the capacity and inclination to report crime to formal authorities. However, numerous challenges have been identified that may impede the effectiveness of these mechanisms, ranging from signal coverage and financial capacity to trust in service providers, as outlined in Section 7.4.

Upon receipt of an SMS or mobile phone call, the recipient is reliant upon the content and alleged source of the message in order to assess its reliability or trustworthiness. Techniques aiming to *reduce anonymity* are therefore critical to increase the risk of detection associated with m-crime commission. Previous studies suggest that controlling the identity of mobile users can be an effective

crime prevention technique. Clarke (1990) demonstrates how the introduction of caller-ID reduced obscene phonecalls in New Jersey, and all mobile telephones include a caller-ID function. However, calls received from unknown numbers are not automatically recognised and users are able to selectively withhold their mobile numbers, providing increased anonymity for motivated offenders. Encouraging users to seek authentication from message senders may also reduce crimes involving *deception*, although economic constraints on low-income users may reduce their capacity to send outgoing messages to verify the identity of senders. As described previously, legislation seeking to curb the misuse of mobile networks has introduced the requirement to register SIM cards in an attempt to prevent the anonymous use of mobile networks and reduce mobile-enabled crime in both Kenya (IHRB, 2013) and Uganda (Uganda Communications Commission, 2012). The majority of survey and FGD participants in both case studies widely supported SIM registration, and in Kenya it was described as an effective mechanism for controlling the dissemination of hate-speech, scams, and other m-crime. In Uganda participants were divided in their attitudes to the effectiveness of SIM registration. Returning to Gow and Parisi's (2008) and Jentzsch's (2012) arguments that SIM registration is likely to be an ineffective crime prevention measure, these findings do not substantiate that prediction. Jentzsch predicts that weak identity verification procedures and the use of false or invalid identity documentation reduces the effectiveness of SIM registration, describing the lack of evidence for a relationship between mandatory registration and crime reduction. Although the findings of this study do not provide empirical evidence for the impact of registration on crime rates, they suggest that SIM registration is *perceived* by users in Kenya, and over half of users in Uganda, to be an effective mechanism for preventing m-crime. As a consequence of SIM registration, participants in Kenya describe adapting their use of mobile communications to avoid transmitting potentially sensitive content. They also describe a reduction in the volume of hate-speech and scams transmitted through these channels as a direct consequence of SIM registration. This indicates that SIM registration is *perceived to increase risks* associated with mobile misuse, contributing to its effectiveness as a crime prevention technique, even if the associated verification procedures are imperfect and even if it does not increase the risks in real terms.

Section 7.4.4 describes the ways in which the communal use of handsets may enhance opportunities for less experienced users to detect and avoid m-crime threats. Specifically, new mobile users rely on more experienced users to access warnings about fraudulent messages and scams, and the presence of a trusted, experienced users may reduce opportunities for crime victimisation. However, in contexts where the majority of people are inexperienced with mobile phones, sharing behaviours may function to multiply the negative consequences of the scam beyond the individual recipient. Recognising these opportunities and risks, techniques could be fruitfully developed to aid *natural surveillance* by encouraging users to share their experience through a range of communication forms, perhaps through community meetings, billboards, radio broadcasts or other awareness-raising activities.

Mobile network operators' anti-fraud teams may also be seen to function as *place managers*; providing a surveillance function over mobile network use. They may also *strengthen formal surveillance* by providing m-crime reporting services with associated response components. However, it is noteworthy that in the digital landscape, unlike in physical settings, any mechanisms that utilise surveillance are only likely to be effective crime prevention mechanisms when accompanied by successful awareness-raising campaigns. Unlike surveillance cameras or security guards, surveillance within mobile phone networks is invisible. Users must be aware of this surveillance in order for it to function to increase the perceived risk of detection.

7.6.3.3 Reduce the rewards and provocations

This study does not identify a wide range of techniques that could effectively reduce the rewards or the provocations associated with m-crime. In part, this is due to the focus of the study that does not address offender motivations, nor are offenders included in the study sample. More information is needed about the rewards associated with m-crime, and further study would be needed to investigate these rewards and the motivations of offenders. However, processes which deny benefits, for example fixing identified vulnerabilities, may be effective at reducing the rewards of m-crime. It may be hypothesised, based on the insights provided by victims of crime, that offenders may be motivated by greed or grievance. If this is the case, reducing the financial benefits may be an effective strategy to reduce some types of crime. Crime motivated by grievance

is likely to be more complex, however. Campaigns aiming to *neutralise peer pressure*, such as PeaceSMS campaigns, may reduce some types of networked crime, although limited data are available evaluating their effectiveness.

7.6.3.4 Remove excuses

The fifth category of situational techniques addresses the guilt and shame associated with criminal behaviour, aiming to remove the excuses made by offenders to 'neutralise' their actions (Clarke & Homel, 1997). This provides a useful framework for understanding some of the preventative action that has been taken in Kenya to address the dissemination of hate-speech through mobile phone networks. Legal frameworks defining and prohibiting hate-speech have been developed that set out rules of behaviour for users, and the study data suggests that these have been widely and effectively advertised and adhered to in Kenya.

Operator service contracts also provide legal guidance for mobile users, and users are required to submit their personal information and sign an agreement prior to obtaining a SIM card. These preventative actions correspond with the *set rules* and *post instructions* categories of SCP techniques. In both Kenya and Uganda, users of SIM cards (in mobile phones and other electronic devices) must complete and sign a registration form for each active SIM card, provide a passport photograph and personal identification, and must acknowledge their acceptance of terms and conditions that include a provision for the termination of services and the submission of personal data to law enforcement authorities if the SIM card is used for unlawful or fraudulent activities. Ensuring that mobile users are aware of their legal and social obligations to communicate responsibly and avoid transmitting anti-social, pro-violence and other criminal content was perceived by study participants to be an effective crime prevention strategy, particularly in Kenya. However, study participants noted that SIM cards can also be bought from street vendors, who are reported to buy SIM cards in bulk for resale. SIM registration has now been widely implemented across Africa (Donovan & Martin, 2014), and may potentially reduce both national and transnational crime associated with mobile phones.

Furthermore, another an effective means to leverage this mechanism may be through community-level guardianship. Recognising the communal information-sharing prevalent among displaced populations in Uganda in particular, community leaders may be suited to fulfil the function of *capable guardians* to protect users within mobile networks. In both Kenya and Uganda, the data suggest that religious leaders are trusted sources of information. Seeding information, such as warnings about particular scams, or advice about registering handset IMEI numbers, with such selected community-level guardians could provide an effective strategy to reduce m-crime victimisation, corresponding with the *utilise place managers* and *post instructions* categories of crime prevention techniques. Involving these respected leaders in wider preventative strategies may also increase the perceived risks associated with the perpetration of m-crime, reflecting traditional mechanisms for the maintenance of order.

Although a widespread sensitisation campaign seems to have effectively raised awareness that transmitting hate-speech through mobile phone networks is a crime, study participants in Kenya expressed confusion about the precise definition of hate-speech. The data suggest that terminological ambiguities in the definition of specific illegal content encourages caution and self-restraint in mobile users. In the absence of legal clarity and a precise definition of hate-speech, some mobile users reported self-censoring their message content in order to ensure adherence to the law. Furthermore, the FGD data reveals differences in attitudes to acceptable and unacceptable content for mobile phone communications. In particular, the categorical slippage between hate-speech and humour may reduce the effectiveness of intended mechanisms to *remove excuses*. However, high-profile prosecutions of people accused of spreading hate-speech were cited as justifications for users to 'take care' in their communications, and can be analysed as examples of the *alert conscience* technique.

In Ghana, Burrell (2008; 2011) notes that scamming by Internet users is re-framed as a strategy of self-preservation or self-sufficiency, creating moral justifications for their actions. In contexts where tribal loyalties and ethnic affiliations create strong bonds, mobile-enabled crimes targeting member of other groups may seem morally justifiable by their perpetrators. Future studies

could fruitfully investigate the processes of moral justification applied to scams both perpetrated by, and targeting, developing world users. This could be particularly relevant to inform the development of further preventative techniques which aim to *remove excuses* for crime.

Participants in the study also reported that community members increasingly use alternative communication channels to transmit potentially sensitive content, in response to the lack of clarity in what constitutes illegal content. Participants also acknowledged changing their own political communication strategies in response to the new legal frameworks prohibiting hate-speech through mobile networks, shifting transmissions of potentially sensitive information onto other more anonymous channels including personal conversations, group meetings, online platforms and leaflet campaigns, as described by several Kenyan study participants. This suggests that *post instructions* is an effective technique for encouraging appropriate user behaviour but that clarify and shared understanding of the boundaries of acceptable and unacceptable content are critical to prevent unintended displacement or adaptation by users concerned to ensure adherence to the law. This may be analysed as an example of *displacement* (Guerette & Bowers, 2009) or *adaptive* behaviours (Ekblom, 1999).

7.6.3.5 Displacement and adaptation

It is worth noting that although participants expressed support for several of the techniques implemented to address hate-speech and m-crime threats, such as SIM registration and the surveillance of mobile communications, these strategies are nevertheless associated with catalysing broader shifts in political communications. The shift from the widespread transmission of hate-speech in mobile terrains to other communication mechanisms such as leaflet campaigns and online platforms may represent the *displacement* of m-crime and anti-social behaviour, and potentially political communications in general, away from the increasingly regulated virtual terrain of mobile networks into less regulated communication mechanisms. Within crime science, displacement is defined as “the relocation of a crime from one place, time, target, offense, tactic or offender to another as a result of some crime-prevention initiative” (Guerette & Bowers, 2009, p. 1333). The relocation of potentially sensitive communications away from a regulated channel to unregulated channels may be interpreted as a

result of SIM registration and the perceived surveillance of mobile communications lends support to this analysis as a process of displacement, or may be analysed as a mechanism of adaptation to the changing dynamics of risk associated with use of mobile phones for the commission of crime (Ekblom, 1999). Measures implemented to address hate-speech in Kenya, for example, were perceived to reduce mobile crime threats more broadly. This may represent an example of *diffusion of benefits*, supporting the argument proposed by Guerette and Bowers (2009) that diffusion of benefits is a more likely consequence of SCP initiatives than crime displacement. In this case, preventative measure implemented to address hate-speech have unintended consequence for the prevention of other types of crime. Further research is needed to examine the consequences of SIM registration and other mobile crime prevention initiatives, for which these findings may offer a valuable starting point.

7.6.4 Responsibilities and capacities for preventing crime associated with mobile phones in developing world settings

It is not a specific aim of this study to investigate the organisations and agencies responsible for the prevention of mobile phone related crime in developing world settings. However, in recognition of the implications of the study findings concerning the social, cultural and situational conditions in which it occurs, particularly those concerning attitudes to the state, some initial reflections are included here.

In Europe, the police have become increasingly involved in the prevention of mobile phone thefts, for example by blacklisting stolen mobile phones (Mailley et al., 2006). According to the study findings, mobile users in Kenya have low expectations of police capacity to prevent mobile phone-related crime, and in Uganda participants did not identify any examples of police involvement in the prevention of recovery of handsets or other stolen assets associated with mobile phones. Identifying solutions which handset *owners* and *users* themselves can implement, and which take account of the differences between and within these groups, are likely to be the most effective in settings where users prefer to rely on themselves and their social networks than on formal authorities and prevention agencies. As trust in MNOs was also found to be high, market-based incentives (Farrell, 2015; Grabosky & Smith, 2009; Mailley,

2011; Roman & Farrell, 2002) may also be effective ways to stimulate crime prevention in these settings. Finally, none of the solutions emerging in Western settings involve collaboration with NGOs or humanitarian organisations. In developing world settings, the study findings suggest that the development and humanitarian sector may be important stakeholders in crime prevention initiatives, and thus their engagement is likely to enhance the effectiveness of further preventative measures in contexts where the capacity of the state, and trust in the state, is low (see Section 7.4.6).

Returning to the analysis of crime associated with mobile phone networks as pollution (Farrell and Roman, 2006; Roman and Farrell, 2002; Newman, 2011) may be helpful here. Effective regulation is an essential component of crime prevention, and as long as the costs of crime are paid by individual users, there may be limited incentives for MNOs to take action to prevent them. Increasing the knowledge base on the threats associated with mobile phones in developing world settings is a crucial foundation for the development of techniques to prevent crime facilitated by mobile phones. Furthermore, Farrell (2015) acknowledges that challenges associated with detecting and preventing mobile enabled crimes are compounded by the globalised nature of mobile phone communications. Where mobile-enabled crimes are transnational and span multiple regulatory terrains, multinational MNOs may be better placed to implement effective regulation than individual states. The involvement of MNOs in preventing crime facilitated by mobile phones is also likely to be particularly critical in recognition of the mistrust in state security forces expressed by study participants. Further research will be needed to investigate responsibilities for the prevention of crime associated with mobile phones in developing world contexts. The reflections provided here may provide some initial direction for future studies.

7.7 Researching crime across cultures

This section of the thesis critically reflects upon the challenges and opportunities associated with researching crime in developing world settings. These reflections are based on the observations and field notes of the researcher, analysis of interviews with local survey administrators, and FGD and questionnaire data related to the methodology of the study. The interviews conducted with survey administrators subsequent to the data collection

(appendix 5) provide particularly valuable perspectives on the methodological challenges. Although the findings support the applicability of opportunity theories of crime in developing world settings, it is important to recognise and acknowledge the limitations in scope and reliability of these data and suggest further methods through which this topic may be investigated in future.

7.7.1 Data collection and adaptability in resource-poor settings

The primary data informing this thesis were collected in developing world settings characterised by complex logistical and cultural conditions. Inevitably, a number of obstacles were experienced during this data collection process, particularly in the challenging environment of Kyangwali refugee settlement in Uganda. This was an unconventional context for the collection of primary data about crime, and some of the basic pre-conditions for the use of traditional data collection tools were not met.

Conducting fieldwork in crisis-affected, developing world contexts is inherently challenging. For the individual researcher working alone in an unknown country, even the completion of everyday activities can be affected by unanticipated complications. Detailed advance planning is impeded by the paucity of information about available resources and conditions in the field prior to arrival, and upon arrival conditions evolve according to factors beyond the control of the researcher. During independent academic fieldwork in resource-poor settings, practices of data collection are therefore unlikely to proceed entirely according to plan. The collection of data for this study was no exception, and was characterised by both challenges and opportunities. In light of the particular fieldwork conditions of this study, a critical consideration during the collection of the primary data for this study was *adaptability*. The unpredictable and evolving circumstances in which the primary data were collected required a commitment to adaptability, and the adoption of a flexible research design that enabled the methodological tools to unfold and evolve as the research was conducted, facilitating an iterative process of data collection, reflection and refinement. The conventional tools and methods chosen for the study comprising interviews, surveys and FGDs, were necessarily revised according to the conditions in which they were implemented. Adapting to emerging challenges, and embracing novel opportunities, proved essential to the conduct of this fieldwork.

Reflecting first on the logistical challenges associated with collecting survey data in the selected fieldwork sites, numerous unforeseen complications emerged. Photocopying the survey tool is a pertinent example of this. A deceptively simple task easily achieved in most conventional settings, it soon became apparent that the office equipment available privately in both Kenya and Uganda is old, slow and prone to jamming. In Nairobi and Kampala, the task of photocopying several hundred pages was further hampered by frequent power cuts affecting entire city districts and lasting several hours apiece. In Kyangwali refugee settlement, and in the surrounding towns, neither photocopiers nor general office supplies were available. Locating copy shops in advance with onsite generators, and allocating a half-day period to this task, proved key. While some administrative challenges were anticipated, in practice these became unexpectedly frustrating and time-consuming, introducing unforeseen delays into the planned schedule.

Other logistical challenges concerned timing the survey administration. For safety reasons the surveys were administered during daylight hours, although the equatorial locations of the case studies provided a shorter window of opportunity than would have been available in the UK. Poor weather conditions including torrential rainstorms further reduced the survey administration opportunities, despite conducting the fieldwork during dry season. Although these conditions added challenges to the data collection, the questionnaire data were nevertheless successfully collected in all planned fieldwork sites.

Conducting the planned FGDs also proved logistically challenging, particularly in Kyangwali settlement. It was incorrectly assumed that an enclosed, private space in which to conduct FGDs would be available to hire. Upon arrival in the target villages in Kyangwali settlement, it became clear that no such spaces exist. Dwellings are small, impermanent, and unsuitable for research purposes, and group meetings are conducted in public marketplaces. Ultimately it was only possible to conduct one of the FGDs in an enclosed space in Kyangwali: a church in Kisonga, the most long-established village in the settlement. Two other FGDs were hosted in open, public settings that were not suited to the focus group method, necessitating methodological improvisation to account for these different conditions.

The duration of the fieldwork provided sufficient time to recruit and train local survey administrators, gain access to study participants, and administer the surveys. However, the brief duration of these trips did not provide sufficient opportunity to acclimatise to these environments, learn about local interpretations of mobile phones and crime, attitudes to police, the state and other authorities, attitudes to data collection, culturally patterned norms of behaviour, or local power dynamics. All of these factors influenced the quality and relevance of the data collected, and in particular the survey instruments. During the FGDs and interviews it was possible (and indeed necessary) to iteratively adapt the methodology according to local environmental and social conditions. The survey instrument, however, was developed and printed prior to administration, and once formalised it was not amenable to adaptation. Moreover, despite daily review and ongoing coding of the questionnaires, many of the weaknesses of these data did not emerge until the dataset was complete, by which point the researcher had returned to the UK and opportunities for further data collection were limited. This could have been mitigated by the allocation of more time to the planning and design of the survey in each of the target countries, enabling the terminology, question and answer formats, and structure to be more carefully tailored to local social and cultural conditions. It is also conceivable that the survey is simply an inadequate data collection tool for research of this kind in developing world settings, and should be replaced with a more appropriate instruments.

7.7.2 Research methods in non-Western contexts

In Western countries, questionnaires and interviews are a popular and familiar approach to data collection, despite their acknowledged limitations (see Chapter Four). We are accustomed to receiving requests to participate in surveys. Market researchers frequently conduct surveys in public spaces, students are required to collect survey data for assignments across a wide range of disciplines, and colleagues and friends may even use informal online surveys to arrange activities and events.

However, in resource poor environments, surveys may be interpreted through different cultural lenses. Moreover, in non-Western settings, populations may be less familiar with these tools. Attitudes to strangers seeking to elicit, and record, information may be informed by different expectations and underlying

assumptions about the motivations of the researcher and the implications of participation. These factors may inform decisions to participate, or affect the reliability of data provided. Examples of both may be found in the data collected for this study. For example, during interviews local survey administrators in both Kenya and Uganda described observing systematic non-participation of particular ethnic groups. For example, in one survey administrator in Uganda commented,

...it was challenging. (Sudanese) People were very suspicious of me, they didn't want to give me their information... they didn't trust me, or trust what I was doing. People were not willing to give me some information.

Reflecting further he explained that, “*they didn't want me to have the power*”. Similar challenges are described in other studies. In fieldwork conducted on refugee livelihoods in Kampala, Nakivale, and Kyangwali refugee settlement, Omata and Kaplan (2013) observe similar patterns of non-participation among Eritreans, while Grabska (2006) describes challenges accessing Sudanese migrants in Cairo. In Kampala, Omata notes that,

...the most daunting challenge during the mission was access to refugees, especially Eritreans and Rwandans who were extremely cautious about talking to 'strangers' ...Even when they accepted to be interviewed, they were apparently reluctant to reveal detailed information about themselves. (Omata, 2012, p. 5)

Findings from Kenya also shed light on the impact of inter-personal relationships between administrators and participants. Administrators reflected in particular on the impact of their ethnicity on people's willingness to participate, and the candour with which they provided responses. One enumerator described participants' changing demeanour subsequent to the disclosure of personal information,

In Eldoret there were three or four people who asked my second name, which I think was not usual ...But they really pushed it, for me to give my, to give them my second name. Which, after I did, they were like “oh, so you are a Luo” which

means from the other tribe, and I was like “yes” then ... I think when answering my questions they were a bit careful on what they were saying.

The relationship between ethnicity and participation was also mentioned during the interviews with survey administrators in Uganda. One administrator collecting data in a Congolese suburb of Kampala described the hospitality of the residents, revealing that they had provided both a translator and a traditional Congolese lunch. She explained,

I needed a translator into Lingala so I found one and people were very kind. They made Congolese food for lunch, I ate with them... because I am Congolese, half Congolese, so they want to help me.

This administrator reported a response rate of 100%, compared to a 40% response rate recorded by the administrator collecting data in a Sudanese suburb of Kampala. It may be postulated that ethnic or political identification with study participants increases access to these populations, and may inform the reliability of responses provided. These speculations cannot be verified or quantitated as no specific data are available on characteristics of non-participants in this study. Researchers must be aware of these distinct sources of bias, and overcome them where possible through awareness of, and sensitivity to, these local conditions. However, examining the survey data in isolation, or relying on the aggregated response rates, may obscure these potential sources of bias.

In addition to differences in participation, reflections on the fieldwork and analyses of the interviews with survey administrators also reveal differences in the openness with which participants responded to questions and participated in group discussions. Examining participants' informal comments and non-verbal responses is particularly useful to contextualise the data and identify limitations in their reliability. In Kenya, administrators expressed reservations regarding the candour of some survey responses. For example one administrator reflected, *“people were friendly but you can say in some cases there were reservations”*. Describing their impressions of participants' responses, they identified differences in the demeanour and body language of participants of different

ethnicities and in different locations. One survey administrators reflected on differences in participation between data collection locations, noting,

...upcountry you could tell somebody really was not willing to give their information, but in Nairobi people were more willing. In some places that could be considered hotspots for the violence like in Eldoret, some people were really reserved.

This administrator described his impression that particular survey questions were associated with participants' reluctance commenting, "*for (questions about) the tribe²³, they are telling you "please, let's skip that" and political affiliations they are telling you "let's skip that".*" He also reflected that the previous experience of violence may have contributed to this reluctance, despite acknowledging the frequent emergence of similar topics during informal conversations,

...when I came to talk to different parties later in the evening they are telling me there are still some reservations from people in the area because of the violence the last time, so people were unwilling to disclose that information because maybe of their fear of what could be happening...

Thus specific local experiences may inform or bias data collected, even within the same country context. Recognising regional differences in participants' engagement encourages reflection on the data reliability. For example, survey administrators speculated that study participants chose whether to participate or respond truthfully according to their assessment of the ethnic identity or political affiliation of the administrator. Recognising that bias in survey data is inevitable in Western and non-Western settings alike, these examples also invite reflection on the survey method, and its appropriateness for collecting data in such heterogeneous environments.

Conducting post- data collection interviews in a one-to-one, informal setting provided a valuable opportunity to collect meta-data on the processes of data collection, revealing errors and inconsistencies otherwise obscured, and facilitating deeper reflections on the informal comments, body language, and

²³ Termed 'ethnicity' in the survey instrument.

demeanour of study participants otherwise obscured. For a Western researcher, interpreting and analysing non-verbal cues and behavioural signals in such different cultural contexts is extremely problematic. Body language appearing to show support for a statement may in fact reflect disagreement or doubt, and cultural norms may prevent the direct expression of personal beliefs and opinions about information given by some high-status group members. Facilitating and recoding these FGD discussions was extremely challenging, and it is highly likely that many of the nuances of the group dynamics were missed. Working with local research assistants can mitigate certain errors and forms of bias, but simultaneously introduce others.

Despite the challenges, FGDs are particularly useful to observe (to some extent) group dynamics and explore communal experiences in developing world contexts. For example, the FGD data add depth to the survey findings, illuminating communal experiences of m-crime. FGD participants identified multiple victims of individual scams, and demonstrated distinctly different attitudes to the communal uses of mobile phones compared to those expressed individually in survey responses. Adapting the traditional FGD approach in response to local conditions, power dynamics and logistical constraints was essential to access these community-level vulnerabilities and to explore the ways in which patterns of shared use and information sharing inform the relationship between mobile telephony and crime in these contexts. Thus, although the facilitation of conventional FGDs proved challenging in the selected settings, they nevertheless provided valuable data to inform theory building for this study.

7.7.3 Recording responses as a source of bias

Digital recording of interviews is a common technique employed to facilitate subsequent transcription and rigorous data analysis in Western settings. However, in both the Kenya and Uganda case studies, the use of recording devices was not regarded by participants as a neutral data collection aide. Rather, these tools aroused suspicion with some interviewees, and transformed the nature of the interview for others; prompting them to adopt a presentation-style address (see Appendix 8). After completing their speech, interview participants in Kenya signalled for the recording device to be deactivated, and were unwilling to answer questions or maintain informal conversations whilst

recording was underway. This resulted in interview data of limited value for the research purposes. Accordingly, it proved most appropriate to record the content of interviews through traditional note-taking, recognising that this prevents subsequent transcription and detailed content analysis.

Similar challenges were noted during the survey, the format of which proved problematic for some participants. In the case of surveys, challenges also arose around recording data. As one administrator in Kampala noted, *“they all wanted to fill it themselves”*. This administrator inferred that this reduced the participation rate among literate Sudanese in particular. He explained, *“I did them all (completed the surveys), you can see it. But I had less people because of that.”* Another administrator described similar experiences,

They really didn't want, like, they wanted to do the questionnaire they said 'we can take it and do it and bring it back' but I said no, it is for me to do it with you...they felt like I was saying they were not well educated, could not read the questions without assistance. But I assured them it was the same for everyone, it was this type of questionnaire. They are not used to this, so they didn't like it.

Self-completion surveys were rejected as a method due to the anticipated high rates of illiteracy among study participants. However according to these administrators, this chosen method was perceived as patronising or disempowering by literate participants. Despite this potential weakness, the chosen method facilitated access to a wider range of participants than a self-completion survey, including non-literate participants and non-English speakers. Nevertheless, these reflections provide insights into unanticipated challenges associated with recording primary data from research participants in non-Western settings.

7.7.4 Generalising from the study sample

As described in Chapter Four, the survey was administered using convenience sampling, inviting the participation of every 6th passer-by. Recognising that this non-probabilistic strategy inevitably influenced the constitution of the sample, the local conditions precluded random sampling due to the absence of reliable population data or a comprehensive sampling frame. Convenience sampling

was nevertheless effective in urban settings across Kenya and in Kampala, with high response rates recorded. However, in rural Kyangwali, context-specific challenges emerged. In particular, the selection of suitable locations for the data collection was predicated on a set of assumptions about their accessibility. Sampling rural populations based on pragmatic, logistical considerations has been described as an enduring 'roadside bias' by Chambers (2008), which systematically biases data collection in developing world settings towards more accessible areas. Accordingly, urban populations and residents of towns and villages situated along major roads are more often sampled than those in remote rural areas. Although the study aimed to sample rural residents, particularly in Kyangwali, accessing urban towns and cities proved more straightforward and urban residents comprise the majority of the survey sample. In advance, from the remote vantage point of the university, the rural sampling strategy appeared feasible. Both logistical information available online and provided by organisations within Kyangwali settlement indicated that the selected villages were accessible by road, and distances appeared feasible. Upon arrival, however, it became clear that although the main gate was accessible by car, an all-terrain vehicle was required for travel within the settlement and none were available to rent nearby. Accordingly, villages that afforded vehicular access with relatively well-maintained roads were selected for inclusion in the study, reflecting an unintentional concession to Chamber's (2008) 'roadside bias'. Given the time constraints of the fieldwork, this strategy proved effective and enabled the collection of survey and FGD data from three villages within the settlement, although it inevitably reduced the representation of villagers living in more remote and inaccessible locations; potentially those most reliant on mobile telephony.

A related sampling issue concerns the survey response rates. It is widely recognised that response rates in the developed world have been declining for decades (Bradburn, et al., 2004; Porter, et al., 2004), attributed largely to 'survey fatigue' (Sharp & Frankel, 1983) and over reliance on student respondents (Porter, et al., 2004). It was anticipated that response rates for this study would be similar to those reported by other researchers, particularly those in East Africa. For example, during Donner's (2006) survey-based research in Kigali, Rwanda, local Rwandan interviewers recorded a 55% response rate. In

contrast, the response rates recorded for the survey were high in both Kenya (87% in Nairobi, 88% in the Rift Valley) and Uganda (66% in Kampala, 96% in Kyangwali). In rural areas of Uganda, participants actively queued to be surveyed, resulting in a 100% response rate within some villages in Kyangwali settlement and in one suburb of Kampala. Even this figure conceals the enthusiasm with which the participants approached the research. While these high response rates appear convenient, in practice they introduced a novel challenge. It becomes very difficult to maintain a sampling strategy when administrators must reject participation from willing volunteers, as opposed to inviting participation from selected passers-by. Under these conditions, the planned strategy to reduce selection bias was not strictly adhered to. One explanation for these high response rates during the surveys is mis-reporting, or even intentional under-reporting, of non-responses. It is possible that, despite clear instructions, survey administrators may have neglected to record non-responses, or selectively under-reported them. These speculations cannot be substantiated as limited evidence is available beyond the records of the survey administrators. However, the periods of survey questionnaire administration directly witnessed by the researcher corroborate the high response rates reported, and there is no doubt that the FGDs were extremely popular among residents of Kyangwali.

It may be conjectured that participants' motivations in developing world settings are distinct from those in Western contexts. Observing that the public have no obligation to participate in surveys, Bradburn, Seymour and Wansink (2004) note that the rewards are largely psychological: they describe these as the opportunity to share their opinion with a non-judgmental listener, to contribute to scientific knowledge, or just to assist the researcher. In the context of the refugee settlement, the associated gratifications may be more compelling. It may be hypothesised that in the absence of opportunities to express their opinions and share their experiences beyond their immediate communities, residents of target villages viewed participation in the study as a means to communicate with camp authorities, or to influence the provision of services. These motivations may have informed both the high response rates experienced during this study, and the content of these responses if participants perceived potential benefits associated with their responses. Great care was

taken to explain the purpose and affiliations of the research both prior to, and again during, each questionnaire administered. It is possible however that participants misunderstood or did not believe the explanations provided. Alternatively, participants may have viewed the research as a welcome distraction from their everyday activities within the settlement, or as a prestigious activity through which to communicate with outsiders. Whilst intriguing, these speculations cannot be verified with the available information. Further research would be needed to investigate participant motivations across a range of non-Western settings, and such research could be valuable for a range of studies.

Self-selection and high participant numbers also proved challenging during the FGDs, particularly as a result of the public locations in which they were conducted. Although a limited number of participants were formally invited to join each FGD, it proved impossible to restrict access. The public locations compounded the high rates of participation and the FGDs quickly became 'unfocused' groups with a community meeting dynamic. In these settings, the structure and format of the FGDs inevitably departed from text-book recommendations. In order to elicit the best possible data under these unanticipated circumstances, it was necessary to develop creative, adaptive strategies. These are provided here both for the purposes of transparency, and in the event that these methods are of use to future researchers facing similar challenges. When it became clear that participant numbers could not be controlled, participants were encouraged to select a dozen 'active' members who would represent the majority, and the majority would communicate their views through these representatives. This compromise both facilitated a manageable discussion and reflected existing hierarchies within the settlement, wherein selected refugee representatives communicated directly with service providers. As far as possible, these representatives were representative of different sectors of the community, and included men, women, younger and older participants. However, within these adapted FGDs, traditional leaders and male community members seemed accustomed to representing the views and experiences of women and children, and facilitating participation proved challenging. This was managed by encouraging women and younger group

members to participate whilst remaining sensitive to traditional hierarchies and demonstrating respect for authority figures.

7.7.5 Survey format and question design

Examining next the specific design of the data collections instruments, future studies may also benefit from greater cultural awareness in designing tools for use in non-Western settings. In particular, the survey design utilised a range of question and answer formats that may not have been relevant or appropriate for the study participants. Specifically, the questions that utilised a Likert scale range of options proved problematic in settings where behavioural norms prevent disagreement, and particularly those characterised by inequalities of power between the researcher and their subjects, or between men and women. Reflecting on observations made during the fieldwork and the reflections of local survey administrators, participants in Kyangwali Settlement appeared reluctant to respond 'disagree' or 'disagree strongly' to survey questions providing these options. Although a pilot was conducted in Kampala, differences between urban migrants and rural refugees prevented the identification of such weaknesses in the survey design until after data collection had commenced. Future studies should recognise these risks, and endeavour to thoroughly pre-test surveys among a representative sample of respondents. For the purposes of this study, it is unclear whether participants' responses to Likert-style survey questions reflect participants' real opinions or merely the cultural conditioning that discourages expressing disagreement.

The order of questions within the survey is also likely to inform the reliability of data collected and the responsiveness of participants to particular questions. The surveys used during this study included personal questions about the respondent at the start (e.g. education, age, etc.), which may have reduced participants' responsiveness to subsequent questions. Initially, these questions were included at the end of the survey. During the training of survey administrators and during early interviews in which the survey was discussed, locals expressed concern about asking personal questions *after* participants had provided responses to the main body of the survey. Moreover, it was suggested that participants would not respond favourably if these questions were asked at the end, as this could be perceived as deception. To avoid this risk, questions about the respondent were included at the start of the survey.

However, it is not clear whether this was a wise strategy, or whether their inclusion at the start informed participants' responses to the remainder of the survey. In future studies, it may be advisable to test whether demographic and other data about participants should be included at the start, or at the end, of surveys in particular developing world settings through, for example, administering two versions of the survey and comparing the results. For the purposes of this study this was not possible, but it is nevertheless important to acknowledge that the selected question order may have biased or otherwise informed participants' responsiveness, and the veracity of the responses provided.

Finally, the survey aimed to collect retrospective data and past experiences of crime and crime prevention. It relied, however, on simple questions and the only recall-enhancing technique was to refer to the previous election period. Future studies could utilise a range of techniques to enhance accuracy of recall, such as using retrieval cues or referring to a timeline of historical events. Lessons may be learned from previous studies of sexual victimisation, which demonstrate that questions that used graphic language to describe the elements of a crime may effectively cue respondents to recall incidents of victimisation (Fisher, 2009). Any techniques used would also need to be sensitive to cultural contexts, and avoid ethnic or political bias. For example, while referencing a particular election period or development initiative to provide a historical cue, the researcher may inadvertently communicate a particular political or ethnic affiliation, which may in turn bias participant responses. In retrospect, it may not have been advisable to refer to the previous election period, as this was characterised by widespread violence and rumours of corruption.

7.7.6 Translation and (mis)interpretation

The primary data informing this study were collected in countries where English is an official language. Nevertheless, language barriers provided unexpected challenges during the fieldwork, particularly for the administration of surveys and the facilitation of FGDs in Uganda. During FGDs conducted in Uganda, it was necessary to control the pace of the discussions in order to enable the translation of topics and questions, and responses from some group members. While some contributions were provided in English or French, and could be

understood and recorded directly by the researcher, other participants used local dialects which required translation. At times, they even required translation first into another local language, and subsequently into English, introducing many opportunities for intentional or unintentional mistranslation. During the survey language barriers also arose. In Kenya, many participants in slum areas speak an informal dialect known as Sheng, while in Uganda many participants were only familiar with local languages. While these challenges were overcome, to some extent, by using translated versions of the tools where necessary, these practices also introduced opportunities for mistranslation of questions, misunderstanding of meaning, and misreporting of responses.

Future researchers are advised to consider potential language barriers in advance and take measures to ensure local survey administrators are fluent in, and all instruments are thoroughly translated into, all relevant languages. Moreover, it is worth noting that official languages are not necessarily spoken by all residents of a country, particularly those residing in rural areas. It is particularly important to translate key terms and concepts. During this study, it is possible that key terms were misinterpreted, or inconsistently interpreted, by participants. In particular, 'security' benefits described by study participants include a broad range of social, psychological and economic benefits. Although these data are presented in Chapters Five and Six and inform the analysis presented in Chapter Seven, the broad interpretation of key terms reduced the relevance of some study findings, which do not directly relate to experiences of crime or crime prevention (e.g. findings around addiction to technology). Future studies should anticipate such challenges, and ensure that key terms and data collection instruments are accurately translated before commencing data collections.

A further consideration concerns the interpretation of particular terminology which may not have universal meaning for all participants. In particular, study participants expressed a wide range of opinions on exactly what constitutes 'hate-speech'. The findings revealed that mobile phone users analyse and interpret their receipt of particular mobile content as political information, hate-speech, gossip or humour, according to culturally-specific frames of reference. Traditional data collection instruments such as surveys are likely inappropriate for investigating concepts which are fundamentally ambiguous, and extended

periods of fieldwork may be necessary to investigate such complex issues. In particular, *hate-speech* proved extremely challenging to research, eluding a consistent definition and identifiable attributes. Rather, the findings suggest that the concept encompasses a spectrum of communications, whose meaning and interpretation are informed by inter-personal relationships, perceived intent, contextual cues, humour, and timing, rather than a quality of particular words or phrases. Calls and messages received through mobile networks are interpreted as threatening or antisocial by recipients according to the conditions and contexts in which it is received, rather than just the content of the message. Messages regarded as humorous when transmitted between close friends may be inappropriate, offensive, or even threatening when sent outside of particular communities of mobile users. Previous studies have described the lack of definitional clarity around this term as an impediment to academic engagement (IHRB, 2013; Osborn, 2008; Somerville, 2011), and even government spokespersons have acknowledged that the applicability of this term to mobile phone content is highly context dependent (Odongo, 2012). The categorical slippage between communications categorised as hate-speech, and those that encompass political commentary and even humour, is likely to reduce the reliability of the data collected, and supports the assertion that alternative methods should be used to investigate such issues, particularly with regard to the development of appropriate methods of prevention which do not infringe on other forms of communication such as humour and political debate.

7.7.7 Building relationships with organisations

The process of data collection for this study was facilitated through collaboration with public and private sector organisations. The difficulties associated with the collection of primary data in such challenging contexts would have been far more extensive without the support and assistance of these organisations. In order to conduct the fieldwork and collect the primary data for the study it was necessary to build effective relationships with a number of key stakeholders. Particularly in Uganda, these relationships provided permission to access otherwise inaccessible communities, as well as enhancing the credibility of the study and ensuring the safety of the researcher. Collaborating with UNHCR provided access to reliable and responsible translators who had prior experience of working with foreign research teams and data collection methods,

were confident to approach individuals and groups and sensitive to local contexts and power dynamics. It was also critical to respect the established organisational procedures and processes to avoid undermining their credibility. For instance, it was customary to provide the translators with a small token remuneration and refreshments in return for their services, but not to provide any incentive for FGD participants. Failure to follow these established procedures would risk undermining the agencies working within the settlement, raising expectations of additional remuneration during future research or damaging relationships between the refugees and service providers. Following established procedures and demonstrating respect for the service providers operating within the settlement secured their support and mitigated potential damage to the reputation of future scholars by association.

In addition to building relationships with organisations, officials and gatekeepers, local community leaders are an essential and powerful resource for the researcher. In Nairobi and Kyangwali, local religious leaders were approached and their informed consent was secured prior to data collection. These procedures demonstrated respect for local traditions, and gaining the support of local leaders also enhanced the credibility of the research. They are likely, however, to have introduced degrees of bias into the data collected. Although study participants were informed about the affiliations and aims of the research, the involvement of organisations and local leaders may have informed their responses to the study and their responses to the data collection instruments. For the purposes of future studies investigating related topics in developing world settings, a longer period of engagement and associated processes of trust building would likely enhance the reliability of the data.

7.7.8 Lessons for future research

Acknowledging and reflecting on the limitations associated with the design of the study and data collection reveals numerous weaknesses which future studies should seek to learn from. Some components of the study design facilitate reflection on these weaknesses, for example conducting post data-collection interviews with the local administrators offers a valuable mechanism through which these weaknesses may be glimpsed, if not fully understood.

In particular, the limited duration of the fieldwork component of this research imposed unfortunate constraints on the quantity and quality of data collected. Future studies would benefit from more extended fieldwork, taking time to gain local knowledge on the core issues, learn about local cultural and environmental conditions, and gain the trust and respect of local populations and stakeholders (particularly local leaders) prior to data collection. Ideally, researchers should be fluent in at least one local language. Where translation of data collection instruments or data is required, adequate time should be allocated to ensure that translation is thorough and clear, and questions and key terms retain their intended meaning. Where possible, local terminology should be adopted to ensure that misunderstandings are reduced and key concepts are clearly operationalized. Future researchers should also take time to familiarise themselves with the new environment, learning how to overcome logistical challenges as well as learning about behavioural norms and cultural differences which may inform participants' attitudes and responses to the topic of investigation and the tools of data collection.

Furthermore, the findings suggest that the traditional data collection instruments used, such as the surveys and FGDs, may need to be more carefully designed and tailored to specific cultural conditions in order to capture reliable data in non-Western settings. Although large quantities of survey data were collected, coded and analysed from both case studies, these data are of limited analytic value. Ultimately, this reflects methodological weaknesses in the design and implementation of the fieldwork, and misunderstanding of the specific cultural context in which it was conducted. Where participants are unfamiliar with the question-and-answer format of a survey, or with the open and equal participation required for a FGD, this unfamiliarity is likely to inform the effectiveness of the approach and the quality of the data collected. The use of participatory methods, such as those developed by Chambers (1983; 2008) may enhance the relevance of data collection in resource-poor settings. For example, the use of participatory mapping (*ibid*) could enable researchers to access data about the location of crime events even among illiterate populations where facilitating one-to-one or small group meetings is challenging. Ethnographic-style fieldwork, using participant observation to augment tools such as interviews and surveys, would also add great value to

future studies addressing attitudes to, and perceptions of, crime and crime prevention in developing world settings.

Acknowledging the challenges and the unique opportunities experienced during the conduct of fieldwork, these methods nevertheless provided access to otherwise inaccessible data on the perceptions and experiences of crisis-affected, developing world mobile users and their communities.

7.8 Conclusion

This chapter has analysed the application of opportunity crime theory and situational crime prevention techniques to mobile phone-related crime in developing world settings. Security benefits include the reduction or prevention of various types of crime, including robbery, violent crime and kidnapping, although study participants relied more on access to informal than formal networks to access these benefits. Mobile phones inhibit crime by increasing the perceived risk and effort, while reducing the anticipated rewards, provocations and excuses associated with the commission of crime. However, these same frameworks also explain how mobile phones facilitate crime. The chapter also examined the virtual convergence of *potential targets* and *motivated offenders* through mobile phone communications, examining social, cultural and situational conditions which increase opportunities for crime in developing world settings, particularly patterns of information and handset sharing. The study supports analyses of mobile phones as attractive *crime targets*, and effective *crime facilitators*. The term m-crime was also proposed in this chapter to the hybrid threats associated with mobile phones. Finally, the chapter reflected on the weaknesses of the selected data collection and analysis methods, concluding with a critical examination of these challenges, identifying lessons for future research, and proposing alternative methods for further research into this topic.

Chapter Eight: Conclusions

8.1 Introduction

The final chapter of this thesis reflects on the implications of the study findings for mobile telephony, security and crime in developing world settings, and for the applicability of opportunity crime frameworks in non-Western contexts.

It remains to reflect on the implications of these findings for both theory and practice, and identify avenues for further research. Accordingly, this chapter summarises the original contributions of the study and acknowledges the limitations of the data collection, analysis and theory building. It further outlines theoretical, methodological and practical implications of the study findings, proposing directions for future research.

8.2 Contributions of the study

This thesis comprises an investigation into the crime inhibiting, and crime facilitating, implications of the rapid and widespread expansion of mobile telephony in developing world settings.

The findings lend support to the relevance of opportunity theories for the analysis and prevention of crime in resource-poor, developing world settings. They suggest, moreover, that situational measures can reduce crime in these contexts. Furthermore, they demonstrate that analyses of the impacts of mobile telephony in developing world settings are incomplete without acknowledging the crime and security implications of these tools for users.

The main research contributions of this study are as follows:

- 1. Mobile phones inhibit crime and have the potential to contribute to crime prevention:**

Mobile phones create new opportunities for crime reporting, detection and prevention. In particular, mobile phones increase the perceived risk associated with the commission of crime by extending guardianship and assisting natural surveillance in developing world settings. They also increase the perceived effort, reduce rewards, and may be used to reduce provocations and excuses for crime in developing world settings. However, uses for formal crime reporting remain limited, and most users rely on informal networks for support. Attitudes

to the capacity and benevolence of the state, as well as other social, cultural and situational conditions, inform user decisions to use mobile phones to report and prevent crime.

2. Mobile phones create new opportunities for crime in developing world settings:

Analysis of the findings reveals that mobile telephony simultaneously increases crime opportunities and contributes to insecurity in developing world settings, as *crime facilitators* and *crime targets*. The previous chapter outlines a number of ways in which mobile phones reduce the effort and risk, and increase the rewards, associated with crime in developing world settings. Furthermore, mobile phone networks may be used to provoke and/or remove excuses for crime in these settings.

3. Social, cultural and situational conditions inform access to opportunities for crime and crime prevention:

Social and situational conditions in developing world settings inform access crime prevention opportunities, and create unique constellations of opportunity for crime. These include dynamics of gender, literacy and language as well as practices of handset sharing, social networks and attitudes to the state. These conditions critically inform the effectiveness of crime prevention mechanisms utilising mobile telephony, and inform the vulnerability of particular groups to acquisitive and networked crime associated with mobile phones.

4. Mobile phones create new, hybrid m-crime threats:

The study identifies, analyses, and develops a preliminary categorisation of the perceived crime and security threats associated with mobile telephony in the two case studies. These comprise handset theft, m-violence, m-theft and m=deception. These crime threats are found to be essentially hybrid and interconnected, each facilitating further crimes. Accordingly the overarching term 'm-crime' is proposed to describe, "*Any illegal or anti-social activity facilitated or committed using mobile telephony*".

5. Opportunity theories of crime and SCP techniques are applicable to the prevention of mobile phone crime:

The study examines the application of opportunity theories of crime and the 25 techniques of SCP (Cornish & Clarke, 2003) to the analysis and prevention of mobile-enabled crime threats in developing world settings. Opportunity theories of crime provide a powerful explanatory tool for examining socio-technical processes of change in these settings, while the application of the *effort, risk, reward, provocations, and excuses* framework effectively facilitates the identification and categorisation of existing and potential crime prevention mechanisms associated with mobile telephony.

6. New methods are needed to investigate these opportunity structures, m-crime threats and potential prevention mechanisms further:

Reflecting on methods of this his study reveal both challenges and opportunities for the investigation of opportunities for crime and crime prevention in developing world settings. These reflections facilitate the examination of the wider suitability of short-term fieldwork and the use of traditional research instruments such as survey, interview and FGD data in developing world settings, and the proposal of more suitable approaches for future research.

During the course of this research, one academic journal article was published:

- Martin-Shields, C. & Stones, E., 2014. Smart Phones and Social Bonds: Communication Technology and Interethnic Cooperation in Kenya. *Journal of Peacebuilding and Development*, 9(3), pp. 50-64.

In addition to these contributions, developing collaboration with public and private sector bodies also added value to the findings, potentially enhancing their applicability to the resolution of real-world challenges. The research resulted in the publication and dissemination of two industry reports by GSMA, containing actionable recommendations for mobile network operators to contribute to the protection and empowerment of crisis and disaster-affected populations:

- *Disaster Response: Guidelines for Establishing Effective Collaboration between Mobile Network Operators and Government Agencies*
- *Disaster Response: Mobile Money for the Displaced.*

The study also resulted in direct, material benefits for participants and communities comprising the case study in Uganda. The preliminary findings of the fieldwork were shared with the Chief Executive Officer of the largest mobile phone network operator in Uganda. In response to the identified demand for enhanced mobile coverage and increased provision of mobile money services, a feasibility assessment was commissioned to enhance mobile service provision in Kyangwali settlement. This subsequently resulted in the installation of a new mobile phone tower in the settlement, enhancing connectivity for users.

8.3 Limitations of the study

Researching crime in mobile networks is challenging due to the paucity of data in the public domain and the invisible nature of these crime opportunities and threats. However, the link between poor socio-economic development and crime, conflict, and insecurity is acknowledged (World Bank, 2011). This study comprises an exploratory investigation into a new topic of enquiry; the relationship between crime, security, and mobile telephony in the developing world. Limited background information is available on this new area of study, and consequently the literature presented herein emerges from a wide range of academic disciplines, industry publications and humanitarian and development reports. Furthermore, using data collected from two case studies, the analysis does not present a comprehensive list of all crime and security threats associated with mobile telephony, nor does it identify all the mechanisms through which these threats might be mitigated. Rather it comprises an exploratory investigation into crime threats and prevention mechanisms associated with mobile phones in developing world settings, from the perspective of opportunity crime theory. The findings presented and analysed in this thesis provide only a snapshot of the interconnections between mobile telephony and crime and security within unique circumstances in a particular historical moment, and offer a point of departure for the wider analysis of mobile telephony and crime. These circumstances are in constant flux, as mobile penetration figures continue to increase rapidly (ITU, 2014), new users engage with the technology, and more advanced handsets become available. Throughout these processes of change, new opportunities are likely to emerge for these tools to contribute to enhancing, and reducing, the security of users. It

is therefore important to keep pace with these emerging m-crime threats and predict future threats, in order to develop preventative measures to address them.

In addition to limitations in the scope of the study, methodological constraints discussed in the previous chapter also affect the reliability and replicability of the data. Inevitably, the fieldwork was subject to temporal and financial limitations and the sample sizes used in this study are relatively modest and non-probabilistic, reducing the precision and generalizability of the results. Furthermore, the survey and FGD methods in particular were subject to a number of contextual constraints, acknowledged and elaborated in Chapter Seven. These include cultural and linguistic barriers and misunderstandings, concerns regarding the veracity of participant responses, and biases introduced during the process of data collection. The survey and FGD methods may be fundamentally inappropriate tools for the collection of data on individual experiences of crime and attitudes to mobile telephony, particularly where social and cultural inequalities and behavioural norms inform participation. Cultural contexts were insufficiently considered in the design of this study. Future studies should tailor data collection instruments more closely to the environmental conditions, social contexts and cultural norms of the sample. Specifically, individual surveys may be inappropriate for collecting data from users in communal cultures, and a more appropriate unit or analysis may be the household or indeed the village. Survey questions utilising Likert-style response categories may also be ineffective in cultures where individuals are unwilling to disagree with perceived authority figures, and inequalities of power therefore result in unreliable responses. Mixed FGDs are also inadvisable where inequalities of power prevent equal participation, for example by women in Kyangwali. Practically, it is not possible to facilitate FGDs (as traditionally conceptualised) in open settings where participant numbers and types cannot be controlled. Acknowledging the limitations of these data, however, they nevertheless comprise a unique dataset collected under challenging conditions, and provide a means to examine the perceptions and experience of otherwise inaccessible research subjects.

Ultimately, this study produces new knowledge concerning the relationship between mobile telephony and crime and security in the developing world,

proposes the development of new terminology and a new theoretical model of m-crime, and illuminates new opportunities for further research, with potentially valuable implications for public and private sector policy and practice.

8.4 Theoretical implications of the study

The economic, social, and political impacts of mobile telephony in the developing world have received considerable attention from disciplines including communication studies, information science, computer science, sociology, anthropology, design, political science, public policy, and economics (Donner, 2008). However, engagement with the ways in which mobile phones may facilitate or inhibit crime and insecurity, create new crime opportunities and compound existing vulnerabilities is a valuable and understudied area of research. While online crime and fraudulent activities are well documented (albeit in developing world settings), the relationship between crime and mobile telephony has been largely overlooked. In developing world contexts, mobile phone penetration is increasing rapidly, and it is therefore essential to identify and investigate the associated crime facilitating, and crime inhibiting, opportunities associated with these tools.

Applying opportunity crime perspectives and SCP techniques to crime in developing world settings is a novel application of these theories. Developed in the USA and UK, and applied primarily in Western settings, the findings of this study suggest that these theories are generalizable to studies of crime non-Western settings. However, the findings of this study indicate that *effort, risk, reward, provocations and excuses* framework is useful for understanding both opportunities for crime and crime prevention in East Africa. Moreover, opportunity theories of crime are particularly useful to contribute to a better understanding of the changing conditions in which crime occurs in developing world settings. Processes of social-technical change in particular provide new crime opportunities, and these are often overlooked in studies examining developmental and humanitarian benefits and impacts. The increasing availability of consumer goods in resource-poor settings are likely to provide new crime targets, compounded by conditions of poor physical security. Just as Cohen and Felson (1979) identified increasing opportunities for crime associated with economic prosperity, consumerism and women's engagement in the workforce following WWII post-war period, the developing world is

currently undergoing broad processes of social and economic change. The findings of this study suggest that both new crime threats are likely to emerge, and new victims become accessible, as mobile penetration increases amongst developing world communities. It is critical for future studies to move beyond analyses of the widely recognised benefits of mobile telephony and to acknowledge the related crime and security threats.

Acknowledging these new opportunity structures is the first step towards designing preventative measures to reduce or inhibit crime in developing world settings. SCP is a valuable mechanism through which to assess existing techniques of crime prevention, and to identify potential measures which could be adopted to reduce or prevent a wide range of crimes. Recognising the social and cultural differences in non-Western settings, a core strength of SCP is the recognition of the importance of context. Examining the effectiveness of crime prevention techniques, SCP acknowledges that measure that work in one place do not necessarily work in another. Furthermore, this approach acknowledges that *perceptions* of effort, risk and reward inform offender-decision making, and therefore identifying and raising awareness of existing preventative measures may effectively reduce crime, with minimal costs. Moreover, populations in isolated and rural communities, and displaced populations, may be particularly vulnerable to crime and thus it is critical to engage with social, situational and cultural conditions which inform their perceptions and experiences of crime and crime prevention, acknowledging inevitable challenges of accessing reliable data. These conditions include literacy, information scarcity, inexperience, practices of handset sharing and the physical security of dwellings, to name but a few. In particular, future studies should acknowledge the complex constellations of sharing behaviours, and investigate the implications of these behaviours for crime and crime prevention to identify intervention points and guide the development of culturally appropriate prevention mechanisms for use in non-Western settings. Furthermore, the definitional challenges associated with categorising particular content as 'hate-speech' suggest that further engagement with cultural practices will be essential to explore the boundaries between appropriate and inappropriate behaviour in non-Western settings, in this case between legitimate political communications, humour and offensive content.

New theoretical tools are needed to explore the impact of new communications technologies on crime in the developing world, where these technologies introduce a range of new criminogenic opportunities. The proposal of the new conceptual category of m-crime, and the application and modification of existing cyber-crime categorisations presented in this thesis, provide a foundation for the development of new theoretical tools with which to address these challenges. Recognising the emergence of m-crime as a response to the changing crime opportunities associated with the increasing penetration of mobile telephony, this study proposes that SCP provides a useful set of techniques for analysing and addressing m-crime threats. Further research is needed to develop the preliminary classification of m-crime threats revealed through the examination of two case studies in this thesis. Although this classification provides a guide for future research, it catalogues only the threats identified during this study, inevitably comprising an incomplete compendium. It is also noteworthy that as more advanced handset models become popular in Africa (GSMA, 2015), changing capabilities associated with these models are likely to bring new opportunities for crime and crime prevention. For example, cameras and digital recording may enhance users' ability to collect evidence of crimes, and Internet access may increase opportunities for crime reporting. The high value of the models may however increase handset theft. Horizon scanning will be needed to identify potential crime threats and crime prevention opportunities, and develop techniques to mitigate or leverage these.

Further studies could examine the types of criminal misuse associated with mobile telephony across country contexts, for example comparing these findings with research conducted in other parts of Africa, or with the experiences of developing world populations in Asia or Latin America where mobile phone penetration varies, and access and use patterns are mediated and constrained by different social, economic and political conditions. Additional research is also needed to develop each m-crime category further, to identify and catalogue other m-crime threats, and to examine the specific risks associated with emerging mobile technologies and tools, such as m-banking and particular ICTD projects and initiatives. Developing a mobile Phone Theft Index, as developed by Mailley et al. (2008) in the UK, would be a valuable tool to inform prevention techniques addressing handset theft, recognising the

challenges associated with accessing the necessary data in developing world contexts.

SCP techniques have been effectively implemented to reduce numerous types of crime, and this study outlines situational prevention mechanisms that may be perceived to reduce or inhibit particular m-crime threats and the misuse of mobile phone networks in developing world settings. The findings suggest that mechanisms that increase the perceived risk associated with m-crime are widely regarded to be effective. However, further investigation is needed to evaluate m-crime prevention measures in more depth, and to identify evidence of displacement and offender adaptation. Specifically, studies could further investigate SIM registration, monitoring mobile content, and specific m-crime reporting mechanisms. Future studies should consider also the potential for the diffusion of benefits and identify mechanisms to maximise the crime inhibiting features of mobile telephony.

Examining the conditions in which handset thefts commonly occur could also inform the development and application of situational techniques to address this crime threat. The study findings suggest that prisons are perceived to be m-crime hotspots, as mobile phones provide incarcerated prisoners with opportunities to overcome physical constraints and access crime targets. This finding is supported by research conducted in Kenya (Karanja 2011, Okuttah 2011), and would be an interesting avenue for further research. Although mobile technology creates opportunities to extend criminal behaviour into digital arenas and beyond traditional environmental settings, perpetrators remain physically situated in these settings, facilitating the application of environmental prevention measures. Future research could develop this argument by evaluating the effectiveness of specific measures, such as the signal blocking mechanisms implemented within prisons on the reduction of particular types of m-crime. A challenge associated with this geographical disconnection between offenders and victims is the transnational nature of some m-crime threats. Future studies could also investigate the extent to which national mobile phone networks provide opportunities for the commission of crimes originating from perpetrators beyond the country's borders, or examine the risks and benefits associated with informal patterns of transnational resource sharing, as identified among displaced populations in Kyangwali.

While this study focuses on the experiences and perceptions of mobile users as victims of m-crime, further studies could address the changing opportunities for crime associated with mobile telephony from the perspective of offenders, examining the factors influencing their decisions, actions, and motivations. Methodologically challenging to access, research targeting the perpetrators of m-crime could provide valuable insights into their assessment of crime opportunities associated with mobile phones. This would require the development of new methodologies to identify and access these research subjects. Burrell's (2012) investigation of the moral justifications of young peoples' engagement with cyber-crime in Ghana may provide a useful foundation for further research into this understudied area.

Further research could also utilise time series data to examine trends, or use computer modelling technologies to map (and potentially predict) patterns in m-crime. Such studies could perhaps explore correlations between particular types of m-crime and regulatory terrains, or the impact of high profile prosecutions and media campaigns on m-crime outbreaks. The dissemination of rumour and false information is particularly suitable for investigation using these research methods, recognising the challenges associated with accessing data about these threats. Gaining the support of mobile network operators could provide valuable information on the reporting of scams and fraudulent messages, providing a means to overcome these challenges.

Having illuminated several avenues for further study that could be fruitfully pursued, this thesis concludes with the proposal that the increasing penetration of mobile telephony in the developing world is likely to create new opportunities both for crime, and for crime prevention. Recognising this, the current historical moment provides unprecedented opportunities for the prevention of emerging m-crime threats. We must remain mindful, however, of the implications of these prevention mechanisms, and ensure that techniques implemented to protect mobile users and their communities do not infringe upon their fundamental rights. According to study participants, users are aware of the increasing opportunities for crime associated with mobile telephony, and broadly support initiatives designed to reduce crime and protect mobile users. The findings around attitudes to monitoring and surveillance reveal complex perceptions of mobile phone networks as simultaneously public and private spaces.

Nevertheless, as penetration rates in the developing world continue to increase, establishing situational and environmental mechanisms to prevent the criminal misuse of mobile networks is essential to protect mobile phone owners, users, and their communities. It is hoped that these findings both ignite interest in the topic of m-crime and security across a range of academic disciplines, and contribute to enhanced awareness of these issues beyond the academic community – comprising as it does a call to action for policy-makers and the private sector, as well as the development practitioner community.

8.5 Practical implications of the study

Addressing mobile phone related crime threats is likely to require the engagement and cooperation of multiple stakeholders, including mobile phone users and their communities, and both public and private sector organisations. Furthermore, organisations and institutions seeking to leverage mobile tools and platforms for development and crisis-response applications should be aware of the implications of these changing opportunities for crime and insecurity.

In order to detect and prevent the associated crime and security threats requires legal frameworks, tools and instruments that can only be developed if these threats and associated crime opportunities are well understood. Since misuse of mobile networks for the coordination of violence and extremism has increasingly been recognised (see Chapter Two), advances have been made in the regulation of mobile networks and the development of preventative mechanisms. Legal frameworks controlling the dissemination of anti-social content, monitoring of bulk SMS content, the mandatory registration of SIM cards and the widespread peaceSMS campaigns are all examples of these measures. Furthermore, globalisation and migration situate m-crime within a dynamic and transnational virtual arena, unrestricted by territorial boundaries. In the absence of international legal frameworks, mobile telephony can function to bring together victims and criminals located in different legal jurisdictions, reducing the potential for the detection and prosecution of perpetrators. Transnational and global strategies implemented in tandem with addressing spatially- and virtually-situated 'hotspots' of crime are therefore needed to provide a complementary, multi-layered approach to address these emerging crime threats (Farrell, 2015).

A further implication of the study findings concerns the credibility issues associated with the widespread receipt of false and anti-social information purporting to originate from reputable organisations, particularly MNOs, which may undermine potential security and simultaneously have commercial implications for the organisations implicated in the crimes. Increasing the capacity of mobile users to identify legitimate content and verify the credentials of senders may reduce these threats and protect organisational reputations. Corroborating information using alternative channels of communication may also be an effective strategy to enhance the credibility of mobile campaigns, for example using radio broadcasts.

Mobile phones present also both a unique set of challenges and opportunities for law enforcement. Reflecting on the effectiveness of existing situational strategies to combat crime associated with mobile telephony, several approaches appear promising. Firstly, the findings suggest that SIM registration is perceived to be an effective measure, reducing the dissemination of hate-speech and associated outbreaks of violence in Kenya since the 2007-8 election period. A striking finding of the study is that the majority of study participants in Kenya and Uganda expressed support for the monitoring of mobile communications. While further research is needed to investigate this further, the findings also suggest that perceptions that mobile phone networks are monitored (regardless of the actual extent of monitoring) effectively function to deter hate-speech, and furthermore are associated with reductions in a range of m-crime types. These findings provide support for the conclusion that raising awareness among mobile phone users that their calls and messages may be monitored for anti-social content is likely to have wider implications for reducing a range of types of crime (a *diffusion of benefits* effect). Furthermore, the findings also suggest that the general public may broadly support mobile phone monitoring in these settings, provided monitoring does not interfere with their everyday uses of these tools.

The findings also suggest that mobile users are developing adaptive behaviours in shifting hate-speech onto other, unregulated, communication channels such as leaflets, word of mouth, and online platforms. It is also possible that offenders may develop adaptive strategies in reaction to perceptions that mobile phone networks are monitored. Further research examining the strategies of

everyday users may be more accessible than targeting offenders, but may nevertheless help to guide analyses of the strategies likely to be developed by offenders.

As technology advances, new opportunities for crime and means of expressing anti-social beliefs and attitudes are likely to emerge. This suggests that addressing the co-evolution of m-crime threats requires ongoing research and adaptive prevention strategies. Ekblom (1999) recommends that academic studies should reinforce learning paths to inform practice. In this case, collecting information on vulnerabilities and methods of offending is valuable if this is fed back to designers and engineers to help them 'think thief' and design out crime. The development of a networked m-crime lab or platform could provide a valuable opportunity to consolidate existing theory, practice and user-level data, providing information for stakeholders to minimise vulnerabilities and raise awareness of existing (and effective) prevention initiatives.

Furthermore, the study findings suggest that the crime-inhibiting potential of mobile phones is currently being under-utilised in developing world contexts. Users and their communities rely primarily on informal mechanisms, and formal mechanisms are insufficiently tailored in recognition of users' needs and capacities. For example, the GBV hotline in Uganda is provided for women to report cases of GBV, in a context where women's ownership of mobile phones is low, their use inhibited by poor network coverage and limited access to phone credit. Furthermore, there are no mechanisms for reporting crime in general in the contexts where the GBV hotline is provided, resulting in its widespread use for these purposes. Identifying and responding to user needs and capacities could increase the scale and relevance of such mobile-enabled crime prevention initiatives. Despite the paucity of data on mobile handset theft in developing world contexts, techniques developed in the UK and other Western settings may be fruitfully applied to the identification of broad preventative strategies. In developing world settings, the most relevant of these solutions are likely to be those by which the owner of the handset can secure the device and *prevent* theft from occurring. Crime reporting in the developing world is likely to be low, for reasons outlined previously (See Section 7.4.6). Furthermore, solutions which rely on tracking handsets after they have been stolen, or remote deactivation, are likely to require technical capacity beyond that of often

overburdened and underequipped police forces in developing world settings. Specifically, solutions such as GSM and GPS tracking, and expensive technology such as locks using biometrics, are likely to be more applicable to the prevention of advanced handsets in Western contexts than in developing world settings. Popular prevention methods identified in the case studies support this. Mobile phone users in Uganda adopt methods such as attaching the phone to the owner using lanyards and carry pouches. Moreover, promoting simple, low-cost wearable solutions such as concealed pockets could further reduce phone theft in these contexts, and could also boost developing world economies if manufactured and sold by local tailors

While further research is needed to investigate and situate these findings within broader contexts and to examine in further depth the opportunities and threats identified, the study reveals that mobile phones have valuable potential for crime prevention, and that efforts must be made to prevent these tools from contributing to new crime opportunities in developing world settings.

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Appendix 1: Communications Survey Kenya

Interviewer Information:

Interviewer Name:	Street Name:
Date and Time:	Physical Address:

Demographic Information:

1. How old are you?
18-25 26-35 36-45 46 - 55 56-65 65+ Prefer not to say
 2. Are you: Male Female
 3. What is your marital status: Married Single Divorced Widowed
 4. What is your level of education? None Primary Secondary College University
 5. Which of these languages do you speak? English Swahili Other _____
 6. Do you consider yourself literate? Yes No Don't know
 7. What is your ethnic group? _____
 8. What is your home state/ancestral home?
Central Coast Eastern Nairobi North Eastern Nyanza Rift Valley Western Other _____
 9. Which district and location do you live in?
a) District: _____
b) Location: _____
 10. What kind of household do you live in?
Live alone Live with close family Live with extended family Live with friends
Other (please specify): _____
 11. How many people do you consider to be close family?
0 1-10 11-20 21-30 31-40 41-50 51-60 61-70 71+
 12. How many people do you consider to be close friends?
0 1-10 11-20 21-30 31-40 41-50 51-60 61-70 71+
 13. What is your primary occupation?
Employed Self-Employed Homemaker Unemployed In education
Other _____
 14. Which of these ranges does your monthly income fall into:
0-5,000ksh 5,000-10,000 10,000- 20,000 20,000-40,000 40,000+
Don't know Prefer not to say
- Mobile phone use:
15. Do you own a mobile phone or have regular access to one? Yes No Shared

16. Which mobile networks do you use?
Safaricom Telcom (Orange) Airtel Yu No carrier Other _____
17. Are you on a pre-paid or post-paid contract?
Pre-paid Post-paid Don't know
18. What kind of handsets do you have?
Basic Feature phone Smartphone Tablet Other Don't know
19. How much do you spend on phone credit each week?
0-50ksh 50-100ksh 100-200 ksh 200-500 ksh 500-1,000ksh Over 1,000ksh
20. How many SIMs do you own? _____
21. How many handsets do you own? _____
22. Which mobile phone functions do you use? (more than one box can be ticked)
Calls SMS Data Radio Other _____
- a) If you use data, which applications do you use?
Facebook Twitter E-mail Google WhatsApp Other _____
23. How many phone calls have you received
a. In the past 24 hours? _____
b. In the past week? _____
24. How many mobile phone calls have you made
a. In the past 24 hours? _____
b. In the past week? _____
25. How many SMS messages have you received
a. In the past 24 hours? _____
b. In the past week? _____
26. How many SMS messages have you sent
a. In the past 24 hours? _____
b. In the past week? _____
27. How many people are in your mobile phone book?
Please specify _____ Don't know
28. How many of these contacts are close family? _____
29. How many of these contacts are close friends? _____
Communication habits:
30. Which of these methods of finding out information is most important to you? Please select up to 3 methods.
Face to face communication radio mobile phone calls SMS TV
newspapers and magazines Internet Local events
Other _____
31. Do you receive information about politics from your close friends and family using SMS?

- Yes No Don't know
32. Do you share information about politics with your close friends and family using SMS?
Yes No Don't know
33. Do you receive information about politics from your other mobile contacts using SMS?
Yes No Don't know
34. Do you share information about politics with your other mobile contacts using SMS?
Yes No Don't know
35. Do you receive information about politics from any other sources using SMS?
CSOs Government Political aspirants Mobile phone companies
Other _____

Political engagement:

Reminder: I am going to ask questions about political subjects in the next section. This is completely anonymous and voluntary so you can choose not to answer any questions, and none of the information will be shared with political organisations in Kenya. Once again I am a student conducting research for a London University project.

36. Are you affiliated with a political party?
Yes No Don't know Prefer not to say
37. If yes, which one? _____
38. Which of the following describes your role within your community?
Citizen Political leader Religious leader Youth leader Elder
Community leader Media producer Other _____ Don't know
39. a) Do you often take a role in organising events in your community?
Yes No Don't know
- b) If yes, what was the name and date of the last event you were involved in organising?
Please specify _____
40. Who do you consider your most trustworthy leaders? _____
41. Who do you trust most as a source of information for your community?
Political leader Religious leader Youth leader Elder Community leader
Teacher Family Media producer Friends Other
_____ Don't know
42. Did you have access to a mobile phone in 2007?
Yes No (if no, please skip to Q47) Don't know
43. Did you receive SMS promoting peace around the 2007 election?
Yes, before the election Yes, after the election No Don't know
- a) Do you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

44. Did you receive SMS inciting violence during the 2007 election?

Yes No Don't know

a) Do you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

45. Did you receive SMS with threatening content towards your own group around the 2007 election?

Yes No Don't know

b) Do you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

46. Did you receive SMS with threatening content about other groups around the 2007 election?

Yes No Don't know

a) Do you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

47. Were you affected by the violence in 2007?

Yes No Don't know

a) If yes, could you tell me more about that? (if you need more space, continue at the end of the questionnaire)

48. Have you received any SMS promoting peace about the forthcoming election?

Yes No (if no, skip to Q49) Don't know

a) Do you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

b) What was the content of the last SMS you received promoting peace?

Please specify: _____

c) How did this message make you feel?

d) Did you pass it on?

Yes No Don't know

e) If yes, how many people did you pass it on to? _____

f) Were they:

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

g) How did you pass it on?

Face to face communication Mobile phone calls SMS Facebook Blog
Email Twitter Other _____

49. Have you received any SMS containing threatening content around the forthcoming election?

Yes No Don't know

a) If received, can you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

b) What was the content of the last threatening message you received? _____

c) How did this message make you feel? _____

d) Did you pass it on?

Yes No Don't know

e) If yes, how many people did you pass it on to? _____

f) Were they

Close friend or family Friend Political party NGO Community leader
Other Please specify: _____

g) How did you pass it on?

Face to face communication Mobile phone calls SMS Facebook Blog
Email Twitter Other _____

50. Have you received any SMS containing funny political content around the forthcoming election?

Yes No Don't know

a) If received, can you recall where from?

Close friend or family Friend Political party NGO Community leader
Prefer not to say Other _____

b) What was the content of the last funny political message you received?

Please specify: _____

c) How did this message make you feel? _____

d) Did you pass it on?

Yes No Don't know

e) If yes, how many people did you pass it on to? _____

f) Were they

Close friend or family Friend Political party NGO Community leader
Other Please specify: _____

g) How did you pass it on?

Face to face communication Mobile phone calls SMS Facebook Blog
Email Twitter Other _____

51. Have you received any SMS messages informing you about abuse or violence elsewhere in Kenya around this election?

Yes No Don't know

50. Do you receive political information by SMS from:

				Do you trust it?		
a) Close friends and family?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>
b) Friends?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>
c) CSOs?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>
d) Political parties/aspirants?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>
e) Community leaders?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>
f) Other _____	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>

51. Do you think mobile phones are a suitable medium for transmitting political information?

Yes No Don't know

52. Do you think the government should monitor SMS content? Why?

53. Are you concerned about your messages being monitored? Why?

a) Does this affect the way you use your mobile phone? How?

54. Do you have any other comments you would like me to record?

55. Would you mind taking part in a brief follow-up survey to be conducted in June or July this year? Please note that you will not be contacted for any other purpose, and your telephone number will not be shared with any third parties.

Yes No Maybe

If yes, please provide a way to contact you: _____

Thank you very much for taking the time to participate in this survey. If you have any questions or comments please contact the lead researcher, Liz Stones, at Elizabeth.stones.10@ucl.ac.uk.

Appendix 2: Communications Survey Uganda

Interviewer Information:

Interviewer Name:	Location:
Date:	Time:

We would appreciate your taking the time to complete the following survey. It should take about 15 minutes. All responses are voluntary and confidential, you will not be asked for personally identifying information. We are interested to gather information about communication during crises. Your experience would be very useful to help us increase awareness about mobile use needs and challenges.

1. How old are you?

18-25 26-35 36-45 46 - 55 56-65 66+ Prefer not to say

2. Are you:

Male Female

3. What is your level of education?

None Primary Secondary College University

4. What is your nationality? _____

5. What is your place of origin? (region & country) _____

6. Where do you live now? (region & country) _____

7. How long have you lived here? _____

8. What is your primary occupation? (choose one option)

Employed Self-Employed Unemployed Student Other _____

9. Which of these ranges does your monthly income fall into:

0-200UGX 200-400UGX 400-600 UGX 600UGX+ Prefer not to say

10. Do you own a mobile phone?

Yes No

11. If no, do you have access to a shared mobile phone?

Yes No (If no to Q10 & Q11, skip to Q32)

12. Which mobile network(s) do you use?

MTN Airtel Warid Orange UTL Other _____

13. Which type of handsets(s) do you have?
 Basic Multi-sim phone Smartphone Don't know Other _____
14. How many SIM cards do you own? _____
15. Are these SIM card(s) registered to you?
 Yes No Don't know
16. On average, how much do you top up each week? _____
17. Where do you charge your mobile phone battery?
 Home Work Kiosk Other _____
18. Does it cost you anything to charge your mobile phone battery?
 Yes No Don't know
- a. If yes, how much? _____
19. Which mobile phone functions do you use? (more than one box can be ticked)
 Calls SMS Internet Radio Torch Other _____
20. How secure would you feel in your everyday life without a phone?
 Very secure Quite secure Neither secure nor insecure Quite insecure Very insecure
 Any comment? _____
21. Do you use a mobile money service?
 Yes No Don't know
22. How did you register for mobile money?
 Independently Agency Phone company Other _____
23. For how long have you been using mobile money? _____
24. What do you use this mobile money service for? _____
25. Have you received any mobile money transfers from:
 NGOs Government Family and friends Others
26. Can you 'cash out' with mobile money nearby where you live?
 Yes No Don't know
27. Do you have a mobile money agent you trust nearby where you live?
 Yes No Don't know
- Any comment? _____
28. Are you aware of any mobile platforms/services for crisis-affected users?
 Yes No Comment: _____

29. How many contacts are in your mobile phone book?

Please specify _____ Don't know

30. For what do you use your mobile phone most?

Social Professional Entertainment News and Information Money/Financial services Other: _____

31. What is your preferred method of accessing information?

Face to face Radio Mobile phone TV
Newspapers and magazines Internet Other

Reminder. Participants have the right to choose not to answer any question or to stop at any time during the questionnaire. Participation is voluntary.

32. Have you been affected by a crisis in recent years? (skip Q33 in Kyangwali)

Yes No Don't know

a) If yes, could you tell me more about that? (if you need more space, continue at the end of the questionnaire)

33. What is your preferred method of accessing information during crisis situations? (Indicate top 3 uses: 1st, 2nd, 3rd)

- a) Face to face communication _____
- b) Radio _____
- c) Mobile phone _____
- d) TV _____
- e) Newspapers and magazines _____
- f) Internet _____
- g) Other (please specify) _____

34. During the last crisis or disaster, did you receive information via your mobile phone?

Yes No Don't know

35. In the last crisis or emergency you experienced, did you receive information via your mobile from:

- a) Friends and family? Yes No Don't know
- b) Mobile phone operators? Yes No Don't know
- c) NGOs/charities? Yes No Don't know
- d) Government agencies? Yes No Don't know
- e) Community leaders? Yes No Don't know
- f) Other (please specify) _____ Yes No Don't know

36. If you have used a mobile phone during a crisis or disaster, which functions did you use?

Calls SMS Radio Internet Torch Other (specify) _____

37. During a crisis or disaster, are you interested in receiving news via your mobile phone

- a) About family and friends Yes No
- b) Where to get assistance? Yes No
- c) About the situation? Yes No
- d) About local services? Yes No
- e) About mobile services?(e.g. mobile money) Yes No
- f) Any other information? Please give details:

38. Do you have a story of using a mobile phone during a crisis or disaster that you can share?

39. Have you ever been the victim of the following via your mobile phone?

- a) Receiving threatening messages or calls? Yes No Don't know
- b) Receiving scam messages or calls? Yes No Don't know
- c) Receiving false information? Yes No Don't know
- d) Receiving unwanted spam messages? Yes No Don't know
- e) Please give further details if possible:

40. Do you think mobile phone use should be monitored to prevent crime?

- a) By the state? Yes No Don't know
 b) By the police? Yes No Don't know
 c) By mobile service providers? Yes No Don't know

41. Please listen to the following statements and state your level of agreement:

a) Having a mobile phone contributes to my personal security

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

b) Registering SIM cards will have no impact on crime

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

c) Mobile phones are the most useful tools for crisis-affected people

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

d) Criminals are using mobile phones to harass and defraud people

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

e) The state should have access to mobile phone information

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

f) The police should have access to mobile phone information

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

g) Privacy of communications is more important than preventing misuse of mobile phones

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

h) Owning a mobile phone gives better access to opportunities

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

42. Do you have any other comments you would like me to record?

Thank you very much for taking the time to participate in this survey. If you have any questions or comments please ask, or contact: Elizabeth.stones.10@ucl.ac.uk

Appendix 3: FGD Tool Kenya

Topic	Questions and Prompts	Time: 1hr 30 mins
Intro	<p>Introduce facilitators and members</p> <p>Explain purpose of study:</p> <p><i>Firstly, thank you all for participating in this focus group to share your opinions about the use of mobile phones for peace-building in Kenya. I appreciate your participation, and your views will help to inform this research and potentially contribute to more effective peace-building in Kenya and elsewhere.</i></p> <p><i>Please accept this participant information sheet detailing information about myself, the present research and contact details should you wish for further information or wish to give feedback at a later date.</i></p> <p><i>Your contributions to this focus group will be anonymous, participation is completely voluntary, you do not have to answer any questions you do not wish to answer, and no personal details will be published about any of the participants of this study.</i></p> <p><i>All information will be treated confidentially and participation is completely voluntary. You do not have to answer any questions that you do not want to answer.</i></p>	5min
1. Importance	<p>Can you tell me about the importance of mobile phones in your community?</p> <ul style="list-style-type: none"> - What are they used for? - What kinds of people have access to them? What kinds of people do not? - Are there particular situations in which they're most useful? E.g. emergencies? Any specific examples? 	10min
2. Communication of political information	<p>How is political information communicated amongst community members?</p> <ul style="list-style-type: none"> - What communication methods do different people use to communicate political information, and why? For example radio, TV, mobile phones? - Are some forms of communication more trustworthy? And others less? E.g. TV, radio, news media, personal communication from friends and family? 	10 min

	<ul style="list-style-type: none"> - Do people use mobile phones for communicating political information, e.g. information about violent events? What do they say? Have you used them to communicate political information? 	
3. Use in elections	<p>How were mobile phones used during the 2007 elections period?</p> <ul style="list-style-type: none"> - Do you think they contributed to violence? Through hate-speech, spreading rumour, inciting violent attitudes and behaviour, coordinating violent action? - Do you think they contributed to peace? Through spreading messages of peace, combatting rumours, informing police and other responders about abuse? 	10 Min
4. Messages	<p>Have you received or transmitted political messages, or messages relating to violence or non-violence?</p> <ul style="list-style-type: none"> - Have you or anyone you know received political SMS messages from any NGOs, civil society organisations? For example promoting peace around the forthcoming election? - Have you received SMS from political parties or aspirants? For example encouraging you to vote for them, mocking other political aspirants, informing you about events? - Have you received SMS about the location of violence or abuse? - Have you sent any SMS about political events? - Have you sent messages to any online platforms to map political events or report events on the ground to any organisations? 	10min
5. Information sources	<p>Who do you think are the key sources of political information for community members, and which mediums do they use?</p> <ul style="list-style-type: none"> - Do people trust politicians from their own party or their own tribe? - Do people trust news reported in TV, radio or the press? Why or why not? - Are community leaders/elders/religious leaders important sources of information and opinion? Are they influential? Are they credible? Are they frequently sources of information or do they stay neutral? - Do the opinions of community leaders affect the opinions of the community members? 	10min

6. Effectiveness	<p>How effective have the peace SMS campaigns been in your opinion, and what have they achieved?</p> <ul style="list-style-type: none"> - Have you been involved in the peace SMS campaign? - Can they change people's attitudes? - Can they change people's behaviours? 	10min
7. Potential	<p>Do you think that messages sent by mobile phones have the potential to promote peace or violence more effectively?</p> <ul style="list-style-type: none"> - Do you think they are more effective for promoting/coordinates peace or violence? Why? 	10 min
8. Monitoring	<ul style="list-style-type: none"> - Do you think the government should monitor SMS content? Around the elections or in general? Why? - Do you think the government are monitoring SMS content? - Are you concerned about the content of your messages being monitored? Why? - Does this affect the way you use your mobile phone? 	10 min
Closing	Thank You. Any questions?	5 min

Appendix 4: FGD Tool Uganda

Topic	Questions and Prompts	Time 1hr 30 mins
Intro	<p>Introduce facilitators and members</p> <p>Explain purpose of study:</p> <p><i>Firstly, thank you all for participating in this focus group to share your opinions about the use of mobile phones. I appreciate your participation, and your views will help to inform this research.</i></p> <p><i>Please accept this participant information sheet detailing information about myself, the present research and contact details should you wish for further information or wish to give feedback at a later date.</i></p> <p><i>Your contributions to this focus group will be anonymous, participation is completely voluntary, you do not have to answer any questions you do not wish to answer, and no personal details will be published about any of the participants of this study.</i></p> <p><i>All information will be treated confidentially and participation is completely voluntary. You do not have to answer any questions that you do not want to answer.</i></p>	5min
1. Communication	<p>Can you tell me how you communicate with people here in Kyangwali?</p> <ul style="list-style-type: none"> - With other people living in the settlement? - With service providers? - With friends and family living elsewhere? - 	10min
2. Needs	<p>What are your most important communication needs?</p> <ul style="list-style-type: none"> - Who do you need to communicate with? - When is it most important to communicate with people? What times of day or seasons? - What information is most important to communicate? 	10 min
3. Ownership / Use	<p>Who has access to mobile phones here?</p> <ul style="list-style-type: none"> - Who can access or use a mobile phone here? 	10 min

	<ul style="list-style-type: none"> - Who is not able to use mobile phones? 	
4. Challenges	<p>What are the challenges and impediments to mobile ownership and use?</p> <ul style="list-style-type: none"> - What are the challenges associated with buying mobile phones? Owning them? Using them? 	10min
5. Benefits	<p>What are the benefits of mobile phones for you?</p> <ul style="list-style-type: none"> - How do they help, practically? In what ways? - Do they improve access to services? What kind? 	10min
6. Trust	<p>Do you receive reliable, trustworthy information through mobile phones?</p> <ul style="list-style-type: none"> - Are mobile phones useful for getting reliable information? Why/ why not? - How do they compare to other methods, like radio? - What kind of information is trustworthy or not trustworthy through mobile phones? 	10min
7. Safety	<p>Do mobile phones have any impact on your safety and security, or that of your community?</p> <ul style="list-style-type: none"> - What are the impacts? - Do they help you feel more or less safe? Why? - How can they improve your security? - How can they reduce your security? 	10 min
8. Privacy	<p>Do you have any concerns about your privacy related to mobile phones?</p> <ul style="list-style-type: none"> - Do you think this is a good channel for transmitting private information? - Do you think it is a private channel? - Do you think that anyone should monitor SMS content? Why / why not? - If so, who would you like to do this? 	10 min
Closing	Thank You. Any questions?	5 min

Appendix 5: Transcripts of recorded interviews with survey administrators in Kenya

Interview #	Sex	Age	Ethnicity	Location
1	Male	23	Luhya	Kibera
2	Female	24	Kamba	Mathare
3	Male	27	Luhya	Kibera Nakuru Naivasha Eldoret
4	Male	25	Kisii	Kangaware
5	Male	26	Luhya	Kangaware
6	Male	23	Luhya	Mathare
7	Male	24	Kamba	Eastleigh
8	Male	29	Kisii	Eastleigh
9	Male	30	Kisii	Nakuru Naivasha Eldoret
10	Male	24	Luo	Nakuru Naivasha Eldoret

Interview 1:

Liz: Thank you for taking part, it was very much appreciated. Can you tell me your name please?

Z: Z_____ (anonymised)

Liz: Ok, and who were you working with? Who was your team partner?

Z: E, I was working with E_____ (anonymised)

Liz: With E, ok. And where were you working?

Z: We were working in Kibera slums, the largest slums in Kenya

Liz: And how did you find the experience of conducting this research?

Z: It was quite a learning experience. You get to meet all the people, and learn some new stuff. Some were cooperative, some were less cooperative, but at least we got some information from them.

Liz: and what were your overall impressions of their feedback, what was the feeling on the ground?

Z: Um, the feeling on the ground... It really depended on the age group.

Liz: The age group?

Z: Yeah, the age group. Older people they are feeling about the general questions we were asking, they thought it was a bit political, they had very different opinions. So, most of the people, like the older ones, they were saying, they are hoping to have a peaceful election this year compared to the one they had last time.

Liz: And what did the young people think?

Z: The young people were like 50/50. Some of them think say they think there will be violence, some of them not, it was going to be peaceful. And you also had like other people... there was a question asking about if you got affected with the election violence in 2007. You mostly had stories from people, some were sad, others who say they lost their friends, family, people were killed, their property was looted.

Liz: Oh gosh. Has the experience of administering the questionnaires and heading peoples' stories, has it changes your attitude maybe to the use of mobile phones for spreading information?

Z: Yeah it's changed my attitude, that... Before the post-election violence in 2007 the government wasn't really monitoring how people were sending SMS, the kind of SMS people were sending, but now the government is really involved in monitoring the kind of messages you send to people, you really have to be careful the kind of messages you send. Again, like, what I heard from people, now that the government is really hard on that, on sending of SMS, some people are going to the internet, like on Facebook and twitter, and now

there's a lot of hate messages that are sent through Facebook, political messages, that kind of stuff. 'Cause they know if they use their mobile phones they will definitely get tracked down but it's not easy to be tracked down using the internet.

Liz: Do they use their mobile phones to access the internet?

Z: Yes, they are still using their phones but now they are going on the internet, they are not texting. You can still write hate-speech 'cause, people on Facebook, people don't put their real names. So some people are using that to spread hate messages, to spread hate-speech. Not that there are no hate messages that are going around now – there are hate messages that are going around now. But not through SMS.

Liz: In 2007 many participants recall receiving hate messages?

Z: Yeah, there are people who were received hate messages

Liz: What was your most memorable experience?

Z: When we had to meet, like, the older guys who were born in the 1950s, the 1960s, they give you a bit of details about life, how things used to be then compared to now, how they wish things would change, and stay peaceful, the way it used to be.

Liz: Did they think it was related to mobile phones, to faster communication? Why did they think it changed?

Z: A lot of people think it changed that way because of the mobile phones; people are using mobile phones to spread hate speech and sending other people inciting SMS that way and it evolves to violence. But back then there were very few people with mobile phones so it was very very rare to find people sending each other hate-speeches. But mobile phones is there, internet is there, everyone can do it, it spreads really really fast. Now most Kenyans have access to the internet or mobile phones.

Liz: That's great, thank you very much

Interview 2:

Liz: Ok first could you tell me your name please?

J: I'm J_____ (anonymised)

Liz: Ok, and who were you working with?

J: I was working with S_____ (anonymised).

Liz: In which area?

J: In Mathare

Liz: And how did you find the experience?

J: It was a nice experience, yeah, because I met different people who had different explanations concerning the questionnaire

Liz: Ok and what were your overall impressions of the feeling on the ground?

J: There is tension because of politics, especially because of what happened back in 2007

Liz: Yes. And did you find that people are concerned about their mobile phone use, around the election?

J: Concerned how?

Liz: For example the question about monitoring, were many people concerned about monitoring?

J: Oh no, they don't mind.

Liz: Really?

J: Yeah, because they don't want people to spread hate, hate-speech through their phones

Liz: and were you surprised about any of the responses?

J: Yeah. When I was asking about the, who they were supporting, others, they didn't want to tell me because they thought I was sent by a politician

Liz: Ah ok. What was the most memorable experience? Was there anything particularly surprising or memorable?

J: Um, I'm not sure (Shrugs)

Liz: No? Ok, did you have any challenges?

J: Yeah. Most of them they were saying the questions, they are too long, and others were asking for incentives, if I have money to give them, and others were in a hurry.

Liz: And has the experience of hearing so many perspectives and different opinions, has it changed the way you see mobile phones around the elections

J: Yes. Yeah, because I think the government will continue monitoring the phones so that hate-speech, it won't spread.

Liz: Do you think that's a good thing?

J: It's a good thing.

Liz: Is there anything else you want to say?

J: Yeah, sometimes it was hard finding someone to interview. Some of them they were refusing me. Only that.

Liz: That's normal, I think, in social research

J: Yeah (Laughs)

Liz: Ok, thank you very much.

Interview 3:

Liz: Thanks for taking part. Can you tell me your name please?

E: (incomprehensible)

Liz: Can you speak louder please, for the recording?

E: E_____ (anonymised)

Liz: In which area?

E: Kibera.

Liz: Kibera, ok. How did you find the experience?

E: It was interesting, people were willing to give out responses without any fear.

Liz: Ok, what were your overall impressions of their responses?

E: It was a bit cool, and I was, I think I'm impressed with the way they gave out their answers without any fear in them

Liz: So were you expecting them to be afraid?

Eric: Yeah, I was expecting them to be afraid at least because it was something to do with the elections, something to do with security

Liz: So were there any responses that surprised you?

E: Not at all.

Liz: No?

E: Yeah.

Liz: Ok. Do you think the experience of hearing so many different opinions has changed the way you feel about these questions?

E: Yes, because on the ground people are feeling that they are not secure enough in the forthcoming general elections. So, I think, I was surprised to find that. Maybe if the government don't, if the government doesn't beef up the security before the elections there will be a repeat, that will repeat again of what happened in 2007.

Interview 4:

Liz: I'm going to ask you a few questions if that's ok?

E: Yeah

Liz: Ok first what's your name?

E: E_____ (anonymised)

Liz: Who were you working with?

E: I was working with G_____ (anonymised)

Liz: And whereabouts?

E: Kangaware

Liz: And how did you find the experience?

E: I found it challenging, a bit (incomprehensible).

Liz: And why do you think that was?

E: Because some of them, uh, they thought it was a bit more political, political questions, and it's a political environment

Liz: Ok. And what were your overall impressions, of the people that did respond?

E: Yeah, like to me, when I started, a number of people I first approached, responded quite well they were quite warm.

Liz: And what was the feeling on the ground?

E: It was nice, a good experience, seeing how they feel as well.

Liz: Were there any responses that surprised you?

E: Not really, but uhh, it was ok.

Liz: Ok what was the most memorable response, were there any responses that stood out?

E: Uhh.

Liz: Any of the questions, anything that stood out?

E: Oh yeah, it was about, at the back of the questionnaire there was a place for any comments, and someone said that (incomprehensible)

Liz: Ah nice. Has the experience of conducting the questionnaire changed your opinion?

E: Yeah.

Liz: Yeah? Like what?

E: I found that people are quite open, and it was a good experience.

Liz: Ok thank you very much

Interview 5:

Liz: Hi, can you tell me your name please?

G: My name is G_____ (anonymised), yeah, and I've been conducting these interviews in Kangaware, in Nairobi the past few days, and it was quite lovely work and I feel quite lucky to be in this research.

Liz: Ok nice, so what was your overall impressions of the feeling on the ground?

G: The feeling on the ground wasn't that bad. We encountered various challenges but we were able to find a solution to the problem because some of the people were not willing to give out their information, some of them they are not willing to be interviewed because this period in Kenya there is political tension because of the coming elections, so people find if you are trying to interview them about the elections, and they don't want to give away who, the candidate they are supporting and their party, so it was quite a challenge, but we were able to find some people who were willing, and were able to tackle the questionnaires

Liz: ...and were you surprised by any of their responses?

G: Yeah. Because the area I went to it was prone to one particular party, but um was surprised to find, like, other people who were supporting other, other political parties.

Liz: Um, what was... Has the experience of administering the questionnaire affected your outlook on the way that mobile phones are used during the election and prior to the election?

G: hmm, maybe... The only thing I would say, maybe the comparison, maybe, how it affected me is that... most of the people who were willing to give out their information, they did not want to go to, to give out any information, especially the mobile phone so people may think you want that information for your personal gain so I was thinking... maybe, the effects of the mobile phone, they are quite much but people are not willing to give out the information cause they

were thinking negatively what you are doing. So it's quite a challenge, maybe you have to explain to them more about the research so that people may be able to understand you and give out the information.

Liz: So how did you explain the aims of the research, how did you introduce yourself?

G: Yeah, I introduced myself as a researcher, that I am helping out one of the students in the (reaches for back pocket) let me just get the, from the University College London, that she is doing a PhD so we are doing this research for the benefit of, so we are not doing it for the benefit of the country, so we are doing it for the university college of London PhD programmes, and that is how I introduced myself. And I am one of the researchers because she is conducting the research in Kenya, that is why she has come and she needs help, so I am helping her to get information for the benefit of her PhD.

Liz: Ok thanks, is there anything else you want to say on... for the record?

G: It was quite a lovely time, 'cause I really love research, yeah, um, ok. Just, it was a special experience to be able to help in this research and I wish you best of luck in it.

Interview 6:

Liz: Could you tell me your name please?

S: My name is S_____ (anonymised)

Liz: Ok, and where were you working?

S: I was working in Mathare

Liz: who were you working with?

S: with J_____ (anonymised)

Liz: How did you find the experience overall?

S: It was a little bit hard but we managed to finish it

Liz: Ok, what were the challenges you experienced?

S: Um, ok for example the drunkards, who can be up into your face and you just continue.

Liz: Ok wow – but there's no danger?

S: No, there is no danger.

Liz: Ok good! And what were your overall impressions of the feeling on the ground, in the area?

S: the ghetto people, they don't used to understand you. So you can make them understand before you... Maybe they don't understand English, so you can interpret

Liz: Ok. Were you surprised by any of the responses?

S: No

Liz: No? Ok. Were there any responses that were particularly memorable?

S: to me?

Liz: Yes.

S: Yes

Liz: For example...?

S: Ok. Why are you taking my phone number? Why are you collecting it? To whom?

Liz: Ok and did you explain it was optional to give a phone number?

S: Yeah if we take the telephone number then we tell that we can contact you if you like.

Liz: Ok. Um, and has the experience of hearing all the different opinions on the ground, has it changed your opinion or has it make you think about things differently?

S: No, not really.

Liz: No? Ok. And what do you think, in general? How do you think mobile phones will be used around this coming election?

(loud background noise)

S: Sorry?

Liz: How do you feel about... do you think a lot of hate speech is bring spread? Or do you think there are a lot of peace messages compared to 2007?

S: there was more, because, I mean this is the area that was affected so there are people that have suffered.

Liz: Ok, thank you.

Interview 7:

Liz: Ok so could you tell me your name please?

JM: My name is J_____ (anonymised)

Liz: Ok and who were you working with?

JM: I was working with J_____ (anonymised)

Liz: ok, in which district? Which area?

JM: in Eastleigh area

Liz: and how did you find the experience?

JM: at first it was difficult to start, but with time it got easy because I got to know what to ask people so that they can accept to do the interview ummm... and some people just, ok some people were a bit shy, cause they thought it was something to gauge their intelligence but you have to show them that it's not that.

Liz: right. And what were your overall impressions of the general feeling?

JM: of people?

Liz: yes.

JM: Most people are afraid to give out information about themselves

Liz: really?

JM: oh yeah.

Liz: Ok, and what, umm, what was the general feeling about the use of mobile phones?

JM: Ok rephrase the question please?

Liz: Ok, we can cut and edit that haha.

JM: Ok sure (laughs)

Liz: I'll ask a different question.

JM: Ok

Liz: were you surprised by any of the responses

JM: Yeah, at times I was surprised.

Liz: Yeah? For example?

JM: some people, there's a guy I interviewed today in the morning, he totally doesn't trust anybody, even his friends, he totally doesn't trust anybody.

Liz: Really? Wow.

JM: Yeah, so he doesn't trust any message he gets, anything he reads or heard on TV, he doesn't trust anything

Liz: Interesting. And did anybody have no friends?

JM: hmmm... No!

Liz: (laughs) what was the most memorable experience?

JM: It happened today in the morning still, some guy had to meet me by his stuff so I can interview him, so I had to buy two eggs, boiled eggs, so that I could interview him, I know you said we should not (incomprehensible) but I had to.

Liz: (laughs) that's funny.

JM: Yeah!

Liz: and um, what was the general feeling toward the elections? Are people afraid, are they excited...?

JM: People are afraid, they think, they are afraid to show that they are receiving any messages, ok, most people are optimistic that things should go well but they are afraid that things might not go well, because even if it is not being spread by SMS, there is talk about violence and stuff, yeah

Liz: Ok and what is the general feeling about SMS

JM: SMS? Ok, mostly reporting that they are not receiving any, apart from maybe IEBC, and from friends, no, they are not receiving anything from friends

Liz: ok, and were they concerned about hate speech

JM: Yeah, they are all concerned about it. Especially back in 07, they were concerned about it a lot then

Liz: Ok. Is there anything else you want to say on record?

JM: hmm, I hope things go well after the elections and remain peaceful. And I enjoyed the whole experience, it was good!

Interview 8:

Liz: Ok could you tell me your name please?

GA: I'm G_____ (anonymised)

Liz: ok, and where, where you working?

GA: I was working in (incomprehensible) area of Nairobi, whereby I was at Eastleigh, in Kamoja estates

Liz: Ok that's great, and who were you working with?

GA: I was working with... do I specify the tribes?

Liz: Your research partner.

GA: Oh, J_____ (anonymised)

Liz: ok, great. And what did you find, how was your overall impression of the research project?

GA: ok at first, before I started the research, basing on the questions that were in the research paper (survey) I didn't expect to get the response I got in the first place

Liz: Oh, ok.

GA: Maybe if I may start with how many people were willing to be interviewed.

Liz: Yes?

GA: Yeah, I can say that maybe in every three people I that I talked to, at least one was responding, which was very good. There's also a very huge Somali population in Eastleigh and almost all of them, the ones I was talking to, responded really well.

Liz: Excellent. Ok, and what surprised you about their responses?

GA: Um, there is the issue of asking someone his or her ethnic background and political affiliation, asking for contacts, a lot of people were giving me that, which was quite impressive.

Liz: Ok.

GA: Yeah.

Liz: ... And what was the most memorable response to any question? Did you have any responses that stood out?

GA: I cannot say there was... because, ah, in this area you'll find that it wasn't really affected by the post-election violence, so most of the response or much of it was kind of similar.

Liz: What were the challenges that you experienced conducting the research?

GA: The challenges I can say was, umm, maybe... Ok we have the Somali and the locals. Now, the local were a bit difficult to get information, unlike the Somalis which were very willing to talk, yeah, they even give you their business premises or where you can get them. Yeah, they really were responding well to that, so that was a bit interesting, and it was sad, the other part, as in the locals were not that free to give that information

Liz: Ok. And did their responses change the way you felt about SMS or election violence?

GA: I can say that because it was the area itself, it wasn't adversely affected by the chaos so I didn't expect a lot. I lived there for many years, but I don't live there now and I wasn't living there when the violence erupted, so I don't think that I got something that I didn't expect

Liz: Ok perfect, any final remarks?

GA: the research went well, that's it

Liz: Ok great, thank you very much

GA: Ok you're welcome

Interview 9:

H: My name is H_____ (anonymised). So I was helping Liz with the research in terms of supervision and coordination. Apparently it all went well, so I'll take a question.

Liz: So how did you find the attitude of the people you interviewed in Nairobi versus upcountry? Were people receptive?

H: People were friendly but you can say in some cases there were reservations. Also upcountry, where you could tell somebody really was not willing to give their information but in Nairobi people were more willing. In some places that could be considered hotspots for the violence like in Eldoret, some people were really reserved. So, like, for some questions, they can easily tell you "no, let's skip that". Also for the tribe, they are telling you "please, let's skip that" and political affiliations they are telling you "let's skip that" when I came to talk to different parties later in the evening they are telling me there are still some reservations from people in the area because of the violence the last time, so people were unwilling to disclose that information because maybe of their fear of what could be happening, but then they could say confidently they are willing to vote and they are trying to get peace but you can see they are still scared. About the SMS I cannot say they were really coming forth with the right information. Some percentage were still not disclosing what is going on, or went

on in 2007 mostly. About the forthcoming, I can say that a lot of peace SMS was registered, yeah and according to my share of the questionnaires I didn't get anybody who reported something violence or threatening for the forthcoming election, but some had it in the last election.

Liz: You mentioned something before in Nakuru, about people and how they reacted to you, do you remember? They asked you, you asked them what ethnicity they were, they wanted to ask you right away.

H: Oh yeah, I think it was a bit of scepticism, some people wanted to whether you are willing to divulge your share of information before they give you theirs. I can say in Nakuru and Naivasha people were more willing to engage in political conversation without any aggression or chance for conflict. I can tell them I am from this party, they also tell me theirs and then we talk about it and discuss about politics. Also in Naivasha there were some, three men who, we discussed a lot about politics, so that shows that some sort of maturity is coming up towards this election that can easily show you there is no violence as much, but about Eldoret I can say there is still some reservations. But in Eldoret I can say there are still some reservations, people are not so willing to discuss further, all the information they were giving... you can see when someone is being watchful of what they say, like, if they give their political affiliation they may be in danger, or may be, like, targeted.

Liz: Was there any particular thing that surprised you during this whole process?

H: That stop we had where we saw some university students preaching peace, I think that showed how much people are willing to get out of your way and move on. It was a good show. I met a lady who said she lost her husband and she was in that event, was it at Cheptika? Those university students. So the lady was also a youth leader who was among the people that is caring about that initiative, and she could freely talk about what she lost. That somehow showed me that people are willing to heal over what happened before, and the possibility of it happening again is not so much

Liz: do you feel like your opinion has changed, or has been affected by this research, like by anything you found out about mobile phones, about using SMS

for violence or peace, has there been anything that has altered any of your opinions on this topic?

H: Yes I told you before, I think people are moving away from SMS, the next target of hate-speech will be social media and I think it should be controlled because people just come up posting anything and some people have so many followers it gains weight but it's just hearsay, the next thing everybody is using that as if it must be true and you never know what effect it will have.. like during '07 it got to a time when mainstream media got closed down so the option we have after that was social media, so if social media is not controlled and mainstream media is actually controlled by the government so the effects from social media can actually be worse than from SMS. That's what I could gather from the research.

Liz: Thank you

Interview 10

Liz: Ok, so state your name

E: Hi camera! Ok I'm E_____ (anonymised), I was helping Liz with the research and, yeah.

Liz: how did you find the attitudes of people that responded to the questionnaires?

E: The attitudes were different. I didn't do the surveys in Nairobi but I did them upcountry. The towns were not so big but each and every town people had different views and opinions. Starting with Naivasha, people were not so willing to disclose or speak freely about what they thought about my questions, especially when I got to the political sections, or questions about their parties or their political affiliations, I think that was the really hard question for people to answer. But I was really surprised with, uh, nobody would care if the government looked into their SMS's, they were all willing and open to do that. In Nakuru most people I interviewed I gathered came from that region. Most people were so proud, and so willing to tell me about their political affiliation and their parties. Yeah I think in Nakuru I think people were so friendly and spoke freely of their views and their opinions. In Eldoret, a couple of them were. In

Eldoret I happened to interview a police officer which I thought was so interesting. According to him, he was so willing he even gave me his number, that when we do the same research, like, to ask maybe in June or July if we are going to do the same research, if he could participate. About the SMS, the government looking into that, he was so open with it, I would say 100% supportive.

Liz: Was there anything really memorable to you that anyone you interviewed talked to you about, a really memorable moment?

E: I think there was a guy that I interviewed in Naivasha, he didn't say it, per say, but his expression, he was so scared... He even told me, I noted it down, that come the March elections he'll definitely go back to his rural home, he won't stay in Naivasha. Apart from that no I don't think there was anything extraordinary that we recorded.

H: (interrupts) did anyone try to beat you up? (laughter)

E: No, everyone was so friendly and I think they wouldn't have considered that... considering I was bigger than them! (laughter) so they were a little bit cooperative! (laughter)

Liz: During these questionnaires and this research, do you think it has affected your opinion at all about mobile phones and SMS affecting peace or violence?

H: Before I answer that I think there's maybe one moment I was almost skipping. In Eldoret there were three or four people who asked my second name, which I think was not usual, because I had already told them about the survey and they not, they were free to say whatever they want and I was not going to record their name or their contact information, but they really pushed it, for me to give me, to give them my second name. Which, after I did, they were like "oh, so you are a Luo" which means from the other tribe, and I was like "yes" then I think to them, or according to me, I think when answering my questions they were a bit careful on what they were saying. My opinion changing? or perceptions, about what?

Liz: about mobile phones or SMS spreading violence or promoting peace.

E: This time round I don't think anyone will use the mobile phone or the SMS because 99% of people I interviewed were willing, and they were so open, they were ok with the government checking their SMS. So I guess, nobody will try and use SMS as a medium to organise anything evil or anything illegal. And most of them said that it wouldn't, like, it wouldn't affect the way they are using their mobile phones. So I think its ok. But one more thing. All the people I interviewed said that politicians are not allowed to campaign, or politic, using mobile phones, they were against that, like, 100% against it.

Liz: Oh and what did you say about Naivasha, when you asked people about threatening content on their phones, you mentioned something about that.

E: Oh yes, about Naivasha, people were not so open and most of them were reserved with their answers but according to their expression when you asked such kind of question, the question to do with have they received threatening SMS they would, like, hang back a little, they would say "no" ...which, that didn't come out so convincing. So, according to my opinion I think they had or they have received such kind of SMS but they are not so willing to talk about it to strangers

Liz: Ok thank you!

Appendix 6: Research Assistant Training Session

Outline

Local researchers were trained over the course of half-day sessions in both Nairobi, Kenya and Kampala, Uganda. These training sessions comprised first an introduction to the research and discussion of the fieldwork objectives, methodology and tools, and second included opportunities to practice administering surveys and overcoming potential challenges. These sessions also included discussion of each of the survey questions, pragmatic suggestions for techniques of administering the surveys, and advice about the collection of additional information such as response rates. An overview of these training sessions is provided here.

1. Introductions: Why are we here?

After an initial round of introductions and small talk, survey administrators were introduced to the research aims and provided opportunities to discuss the both the field of research and the purpose of the survey data collection. This aimed to ensure their familiarity with the topic, and to equip them to respond any questions or concerns which might be raised by participants or potential participants.

2. Sampling: Who are we surveying?

The sampling strategy employed was to invite every 6th passer-by to participate in the survey. Administrators were encouraged to discuss the idea of sampling participants to represent wider populations and to consider the reasons for selectively sampling rather than targeting particular 'types' of people, or inviting every passer-by. As they discussed the benefits and weaknesses of this approach, they were able to raise potential concerns about response rates and anticipated problems with accessing particular groups, and these issues were addressed as they arose.

3. The approach: How do we invite participation?

The administrators were provided with the participant information sheets (Appendix 7) which include a brief summary introduction of the research are were designed to be read aloud. These were discussed as a group. This part of the training also included general advice on dress, demeanour, and body

language, expectation management, and appropriate ways to deal with rejection.

4. Administration: How do we get the data?

Administrators were provided with copies of the questionnaires and encouraged to read through and discuss them with each other. Key terms were examined and defined, and any definitional issues which arose were clarified at this stage. The survey questions were discussed in order and general tips and advice provided. These included issues of language and translation; ensuring that administrators understood the *meaning* of questions clearly and were able to rephrase or translate these as necessary while retaining standardised meanings.

5. Testing the survey: Trial and error

In pairs, the survey administrators were provided the opportunity to test their approach, introduction and survey technique on each other and on a convenience sample of the general public, before discussing their experiences and feeding back to the group. This provided opportunities to identify difficult questions, weak or confusing wording, and unclear directions.

6. Conclusions

In the final part of the training session, administrators were encouraged to consider their personal safety and security as paramount and were instructed to check-in regularly and to conduct surveys in pairs.

Appendix 7: Participant Information Sheets

Good day and thank you for your participation in this study. My name is _____, I am conducting a survey on behalf of Liz Stones - a doctoral researcher in Security Science at University College London. The aims of the study are to understand how mobile networks may contribute to violent or peaceful outcomes. If you decide to participate in this study, I will ask you a series of questions about your mobile phone use and your opinions about mobile telephony.

Your responses to these questions are valuable. The research will be published through the university and potentially through academic papers, and may presented international conferences. Your name and other personally identifying information will not be disclosed in any publications.

Your participation in this study is entirely voluntary and your decision of whether or not to participate will not prejudice your future relations with the University College London. If you decide to participate, you are free to discontinue participation at any time. If you have any questions now, please feel free to ask them. If you have any additional questions at a later time, I will be happy to answer them. Any queries about this study may be directed to Kati Carter at UCL SECReT, 35 Tavistock Square, London, WC1H 9EZ or k.carter@ucl.ac.uk.

Sincerely,

Liz Stones
Doctoral Researcher

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Appendix 8: Interview Transcripts Kenya

1. Country Director, EISA

My name is F_____ (anonymised), I am the country director of the Electoral Institute for Africa, EISA in short. We will be having an election two or three weeks from now and it's going to be an election that is unique and unprecedented in our history, with so many things happening. One, we have increased elective officers, we have the provisions for the Presidential run-off, and we have so many parties and so many people contesting this election. We are optimistic that despite the disputed 2007 election and 2008 post-election violence, measures that have been put in place should be able to guarantee free, fair and peaceful elections. There are a number of things that will need to be done and a number of reforms that have been put in place including a new Constitution and election laws. We also have a new IEBC, election management body, but as I've often told them we hope that the time is not for complacency. We need to be very vigilant and we need to do everything that we possibly can to ensure that we have a peaceful process. The campaign is happening but there are also sufficient deterrents, particularly hate-speech is lower than it was in 2010, 2007 election and 2005 post-election violence so we are very confident that we'll have a peaceful election process.

2. Vice-chairman, Peacenet

My name is W_____ (anonymised), I am the vice-chairman of Peacenet which is a network of peace organisations in Kenya. We have divided into 11 regions, we have a national board and I am part of that national board. Our focus is preaching a culture of peace in Kenya through the grass roots approach because we have a lot of local partners at the grassroots level. We can talk about Mombasa, we are there, in Kenema, nearly every part of Kenya we have a Peacenet member. So we are basically a networking organisation. In Eldoret where we are today I am the vice chairman of the region and we bring together about 7 countries. About the peace situation we are talking about in three weeks exactly from today we have the election and I'll tell you today comparing this period and the period prior to the 2007 election, I would say this is the most peaceful one because we have not had any indicators of violence or conflicts, people are just going about their business, traders are not having any

nightmares and preparing to leave unlike in 2007 when people were closing early, others were going on holiday to the country because the situation in the country was very hard. Because the stakes were also very high, because the PNU was battling with ODM, we were really scared. Everybody was the majority in this particular area they were supporting ODM. There were a lot of fears circulated all over the country that PNU was working together with the government to rig the election, so there was a lot of fears in ODM that ballot boxes were being moved all over the country so that they would be able to us that to rig the elections so to speak. So there was this atmosphere of fear, all the hate-speech, politicians were talking very tough. So, I would say that at that time it was very very bad. This time it's not too bad, people are just going about their business and a pointer to the very peaceful elections is the primary party elections are very very peaceful, people are just going to polling stations and in this region there was not a single incident so I would say that is a very positive sign.

3. CEO, Peacenet

My name is S_____ (anonymised), I am the CEO of Peace and Development Network, PeaceNet. This is a network of peace-building organisations that are interested in ensuring there is peace in this country. Not just during the elections, but also at all times. We envisage a time that the Kenyan people can live in harmony and peace and sustain a culture of peace and development.

So during this time of elections, my appeal on behalf of my organisation is that Kenyans should know how to make use of what they have positively. If it's a mobile phone that you have, don't use it to spread hate messages, don't use it to incite other people. It's all right to have opinions and even campaign for your people, but make sure that whatever you do it does not then infringe on the rights of the other people, or maybe cause harm or other people to get hurt. So it's ok to have positions, its ok to think what you think, that's your right, and that's how you're going to vote on March 4th. So let people use the mobile phones wisely to spread messages of peace, and also to report any incidences of violence or any mobilisation for violence. You can text such messages to 108 and that will go to a place where there are people who are going to analyse the messages and appropriate action will be taken. So if you notice any mobilisation

for violence maybe people planning or talking that they want to cause violence, then you send a text message. It is safe, nobody will be exposed by, you know, sending a text message to that number. It's because we all love Kenya and we want Kenya to be a peaceful place, so whatever action will be taken it will not be exposed or revealed who has given us the message but we will just take appropriate action in the interests of peace and security for our country. So, Kenyan's let's go and vote! And let's do it nicely!