# Beyond the mobile phone

## The impact on livelihoods in rural Rwanda

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Radboud University Nijmegen

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Niek van Enckevort
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# Executive summary

Many news reports and statistics on mobile phone ownership in Africa show us that there is a rapidly growing number of people that have a mobile phone in mainly urban, but also rural areas. Many research has already been conducted on the possibilities and applications that a mobile phone has to offer, but what does it really mean for the people who are living there? Therefore, this research focuses on people's personal usage of the mobile phone and its impact on the development of their livelihoods. Theoretically speaking, because a mobile phone gives people the possibility to connect with different geographical places without actually going there, they are able to act in a new perception of space and time: the Space of Flows. The space of flows should be seen as the abstract translation of the compressed time and multidimensional space we live in nowadays due to information and communication technologies. The fieldwork was conducted in rural Rwanda, partly because of the RurbanAfrica project, wherein this study took place, and because the country has shown interesting social and economic dynamics since the horrifying genocide that took place exactly 20 years ago. With its *Vision 2020*, the government is trying to transform its economy from subsistent agriculture to knowledge based and want to become an ICT-hub for Eastern Africa.

The objective of the research is; *To understand how Rwandan people take part in the space of flows by investigating how the use of the mobile phone affects their daily livelihoods in terms of connectivity and mobility.* This objective leads to the following research question; *How are mobile phones enabling Rwandan people to take part in the space of flows and how does this impact their livelihoods in terms of connectivity and mobility?*

By visiting households in rural Rwanda and conducting questionnaires, data was gathered about household characteristics, their mobile phone use and in particular the impact of the mobile phone on connectivity and mobility of one member of the household. A total of 112 households were reached, which resulted in data about 554 household members. In statistics, 47% was male, the average age was 23.3 years old, 55% was 16+ in age and out of these 'adults', less than 20% was able to continue education after primary school, only a few were able to go to university and 25% had not had any education at all. Of the 112 households, 76% was active in agriculture and 14% of them did not own land. Concerning the ownership of mobile phones, 50% of the 307 adults had one, while of the 112 households, 24% was without a mobile phone.

Taking a closer look at the individual experiences of 112 respondents showed that the impact of the mobile phone on connectivity was considerable high; people with a mobile phone were able to create economic networks which provided them with informal and part-time job opportunities, set up logistical systems for their trade business, got information about markets and prices and were able to reach more markets. The connectivity provided by the mobile phone made it also possible for people to ask for support during hard times as they could receive money via the mobile money system. However, not everyone who has a mobile phone was using it for economic development of their livelihood and it turned out that the quality of someone's mobile phone had some influence on its usability. People with a (partly) broken mobile phone are, for instance, limited to just calling or texting. The impact on people's mobility was also considerable, but very diverse. It turned out that mobility for social reasons decreased, while economic related mobility increased. A clear outcome was that people with a mobile phone were organising their movements much more, which led to

very efficient mobility behaviour. Because people get more job opportunities through the mobile phone they are tempted to travel further; higher frequency and diversification of mobility.

The networking logic of the mobile phone and the efficient travel behaviour gives people the possibility to diversify their livelihoods much more. Having access to the space of flows seems to lead to a change in society; people are able to inform themselves much more and are arranging many things through the mobile phone. A network society is becoming apparent in rural Rwanda and together with the ability to act in the space of flows when you have a mobile phone, it gives these people a more active role in their struggle against poverty. They can build up a more efficient and commercial economy from the basis; from their own livelihoods.

It is vital for the Rwandan government to know how the everyday life of Rwandans is affected by the mobile phone in order to refine the Vision 2020 and reach its goals. Because the group of people without a mobile phone is still an existential one, research with a more qualitative dimension of mobile phone use, focussing on (partly) broken mobile phones and on the sharing of mobile phones could provide important insight on how these people are developing their livelihoods. Altogether, acknowledging that livelihoods are increasingly being developed in a new dimension of *time* and *space* would be a good start for further research on 'mobile development'.

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# 1. Introduction

## 1.1 Introduction to the research topic

### 1.1.1 Mobile phones

Can you imagine European life without a mobile phone? Maybe, but it is very hard to see how our everyday life would still function when suddenly nobody would have a mobile phone anymore. Businesses would struggle as their customers are not able to be in direct contact anymore and commercial services would reduce to a basic level we are not accustomed to anymore. Next to the economic impact on our information society it will also have far reaching effects on our social lives, that have become much dependent on being reachable all the time. Staying in touch with family and friends, or just organising your social activities on a daily basis will be of a very different order. From being reachable anywhere anytime, it would then suddenly be vital again where you are; most favourable in the near of a fixed telephone line, which would mean being home or at your office. This also applies to the person you want to be connected to. In short, it means that the condition of place, *where* you are, would make a huge difference again in your economic and social activities. This specific new dimension of space was one of the major impacts of the mobile phone, as it completely detached the concept of space from being able to communicate with someone else. It changed our lives drastically and it certainly has had major impacts on the development of the global information society as we know it nowadays.

To consider that the mobile phone entered our Western world some 25 years ago (first GSM call made in 1991 by Nokia, www.nokia.com) and that it changed our societies to such an extent, it is very interesting to see how the mobile phone is impacting the developing world. According to de Bruijn (2008, p. 11), "developments in mobile telephony are moving rapidly in Africa and the social margins seem to have stepped into the world of wireless communications all of a sudden". De Bruijn states that, "in comparison with earlier communication technologies, the mobile telephone has special characteristics that do indeed allow associations with the word 'new' to be made. And compared to earlier means of communication, the telephone connects one almost instantaneously" (2008, p. 11). The increasing use of mobile phones in the Western world has had major impacts in societies, and according to de Bruijn, "in Africa, a telephone culture is also emerging and it now seems impossible to imagine a world without the telephone in social and cultural life*"* (2008, p. 12). The directness and swiftness of the mobile phone puts the efficiency of economic and social contexts on a whole new level. In their article, Aker & Mbiti (2010) say that, "mobile telephony has brought new possibilities to the continent. Across urban-rural and rich-poor divides, mobile phones connect individuals to individuals, information, markets, and services" (p. 1).

In a news report by VOA-news.com (January 2013), the following was stated;

> *"According to the World Bank, Sub-Saharan Africa is now home to approximately 650 million mobile phone subscribers, a number that surpasses the United States and European Union, and represents an explosion of new communication technologies that are being tailored to the developing world"* (25-1-2014, www.voanews.com).

Searching on Google with terms like 'mobile phone', 'Africa' and 'development' will give you numerous other similar news reports as the one just given. In a continent like Africa, the mobile phone has become available to larger parts of the population since the new millennium. Data from World Bank shows that in Sub-Saharan Africa, the mobile cellular subscription per 100 people was

7.4 in 2004 and this raised steadily to 17.8 in 2006, 31.9 in 2008, 44.8 in 2010 and 59.7 in 2012 (data.worldbank.org). The comparable data of the European Union in the same period shows 85.9 in 2004, 105 in 2006, 120.5 in 2008, 118 in 2010 and 122.6 in 2012. Basically everyone in the European Union has a mobile phone, as the figures have stabilised in the last 5-6 years. In the developing countries in Sub-Saharan Africa the figures continue to rise, which means that there are still people who are new users of a mobile phone. These people are mostly found in the rural areas where local network coverage has been poor, but where telecommunication companies are nowadays installing new network technologies like 3G and 4G networks (3-9-2014, www.orange.com). In a report by the International Business Times on two Asian telecommunication companies and its intentions of installing 3G networks in Africa, it is stated that "the technology could bring data services to many rural areas of Africa, which have been largely out of the telecom firms' reach due to infrastructural barriers" (3-9-2014, www.ibtimes.com). As the rural population is usually the bigger share of the total population in developing countries, rural population in percentage of total population in developing countries in Sub-Saharan Africa was 66.5% in 2004 and 63.2% in 2012 (data.worldbank.org), it seems that a completely new part of the population in these countries starts to have access to the mobile phone. What impact is this going to have on the lives of these rural dwellers, both economic and socially?

As this thesis focuses on that question, I first want to make a side note on that possible impact compared to the impact of the mobile phone in the Western world. Data from the World Bank shows that the European Union had 48.7 fixed telephone lines per 100 people in 2004, which was at that time already stabilised and even declined to 43.8 in 2012, due to the use of a mobile phone instead. For the developing countries in Sub-Saharan Africa, this figure was 1.5 fixed telephone lines per 100 people in 2004 and this remained almost the same in the years after. This shows that people in the European Union were already very comfortable with communicating with someone while not being face-to-face with each other and this has been influencing the Western society since the middle of the twentieth century. Obviously, people in developing countries were accustomed to other forms of communication, as "it is true that an exchange in the form of letters was also available in colonial times to large groups of people" (Gam Nkwi, 2009, p. 51). For societies in Sub-Saharan Africa however, the mobile phone was basically the first encounter with a device that enabled you to communicate at such quick interaction with someone else while you were not in the same *place*. As Gam Nkwi puts it, "access to voice communication has only developed into a common form of communication in the recent period of mobile phones" (2009, p. 51). Access to the mobile phone must have had and still has major effects on the developing world, which is also endorsed by Aker and Mbiti (2010), who stated that "these effects can be particularly dramatic in rural Africa, where in many places mobile phones have represented the first modern telecommunications infrastructure of any kind" (p. 1).

This research takes places within the African Rural-City Connections (RurbanAfrica) project, which conducts research on rural transformations, mobility and urbanization processes in four sub-Saharan countries; Rwanda, Tanzania, Cameroun and Ghana (http://rurbanafrica.ku.dk/). Rwanda is chosen out of these four as the country where the research will take place because of the current social and economic dynamics that arise from its horrible history, its remarkable situation of today and its promising future. Furthermore, President of Rwanda, Paul Kagame, once mentioned that from being an object of luxury and only affordable for the rich, the mobile phone has transformed into "a basic necessity in Africa" (cited in Aker & Mbiti, 2010, p. 2).

### 1.1.2 From *place* to *space*

It is clear that the mobile phone has had and is still going to have major impacts on economic, social, cultural and political aspects in developing countries, especially considering that the larger parts of their populations are only now getting access to the several developmental possibilities the mobile phone has to offer. The mobile phone is a tool which makes it less important *where* you are, as you are able to connect with almost anyone you like, but also through various ways, as the mobile phone gives multiple options to connect with people or request particular information that you need. This has changed the perception of time and space enormously and has created some sort of new entity in which (social) practices can take place. This new entity is described by Castells (1996) as the 'Space of Flows', which "... means that the material arrangements allow for simultaneity of social practices without territorial contiguity" (Castells, 1999, p. 295). In short, as the time-sharing social practices are no longer, or less dependent on the geographical proximity, the social practices increasingly take place through *flows*, which *connect* these different geographical spaces. For these time-sharing social practices, certain tools and conditions are required which can transform these practices into flows. A social practice may be for example, a conversation; people being in the same place at the same time is a logical pre-condition for this to happen. New communication technologies have transformed this pre-condition as they turn that social practice into a flow, which then becomes independent from the geographical proximity. The space of flows should be seen as the abstract translation of the compressed time and multidimensional space we live in nowadays due to information and communication technologies.

### 1.1.3 A livelihood perspective; everyday life in rural Rwanda

The everyday lives of people in developing countries, which are now getting immersed with the new possibilities of the mobile phone, must be seriously impacted by this new dimension of time and space. In order to get a good understanding of this impact, it is important to scale down to these everyday lives by focusing, in particular, on their livelihoods. The livelihood perspective was developed to get a better insight on people's struggle to get out of poverty and focuses on people's belongings and everyday activities that are undertaken in order to survive. With a focus on the micro-level, the unit of analysis may differ, as the livelihood of a local community, an extended family, a household, or an individual can be analysed. For this research I will focus on the livelihoods of households in rural Rwanda to understand how the use of a mobile phone is enabling them to develop their livelihood. Is having and using a mobile phone already sufficient to develop your livelihood or do you really have to know how to use a mobile phone to be able to get out of poverty? Or, when you do not have a mobile phone, what does this mean for your livelihood, while many people around you do have a mobile phone? These are already two significant questions that come up at first instance. To get a good insight into the households livelihood, I will put an emphasis on the two components of mobility and connectivity within that livelihood. The connectivity of a livelihood can be divided in particular types of connectivity, as someone is connected with another person because of a certain reason, which can be familiar, friendship or work-related. The mobility of a livelihood can also be divided in particular types by looking at, for instance, the frequency of mobility, the direction of mobility, or new forms of mobility.

#### 1.1.4 Core of this research

Summarising the above, the main objective of this research is; *To understand how Rwandan people take part in the space of flows by investigating how the use of the mobile phone affects their daily livelihoods in terms of connectivity and mobility.*

The main research question is; *How are mobile phones enabling Rwandan people to take part in the space of flows and how does this impact their livelihoods in terms of connectivity and mobility?*

The emphasis of the research will thus be on the livelihoods of people in rural Rwanda and how they try to develop these. If this is with the help of a mobile phone, it can be said that livelihood development partly takes place in the space of flows. The interesting point here is how a household is using a mobile phone to develop its livelihood. To be able to grasp this, the division is made between the connectivity side of a livelihood and the mobility side as this is where I think the impact of the mobile phone can be analysed most effectively. If the livelihood development of a household is not supported by the use of a mobile phone, it is still very important to analyse this household within this research, as it is highly likely that the space of flows also affects the excluded.

### 1.2 Relevance of the research

In a research article by Martin & Abbott (2011) it is stated that "researchers argue that ICTs may help to achieve development objectives in their roles as *complementary* tools that assist in the effectiveness of outreach programs" (p. 17), but it also says "that ICTs have the ability to *enable* change, though not necessarily to *create* change" (ibid.). The important part is thus, how people use the mobile phone and how this is helping them in developing themselves. This is acknowledged by Sey (2011) who said about ICT projects in the developing world that they "continue to reveal much about the *potential* of ICTs, but little about how this potential can be translated into widespread reality" (p. 375-376). This research will focus on people's personal usage of the mobile phone in rural Rwanda. By getting this bottom-up insight it will be much clearer what the actual impact is of the mobile phone on the everyday life of those people. With this practical knowledge it is then possible to respond more accurately on the developmental side of mobile phone use or mobile applications by knowing which issues need more attention or are maybe not even touched upon at all. It will help people to use the mobile phone more accurately in their livelihood development when they know where they can gain most benefit from it.

The theoretical basis for this research consists of the *Space of Flows*, which tries to deal with the contemporary diversity of the *spaces* we experience in our daily lives. This theory is connected with the so called *Network Society*, a term also developed by Castells, which shows that societies nowadays are run through networks completely. Up to now, it seems that *Space of Flows* is merely applied to western societies and the main theoretical relevance of this research lies in the use of this 'western' theory within a new spatial context; societies in the developing world. Having a mobile phone gives people the possibility to act in the space of flows and it would be interesting to see if people in rural Rwanda are actually aware of the fact that they act in a new dimension of time and space and how they then act. Furthermore this research can give an indication on how the *Space of Flows* theory can be used in the world of development, as it may show that people are acting differently in a space of flows when they are primarily designated to their livelihood development. Moreover, by combining the impact of the mobile phone on livelihoods and the influence of mobile phones on the emergence of a space of flows, two fields of debate are linked with each other; is

acting in a space of flows nowadays becoming a precondition for Rwandan people when they want to develop their livelihood further?

### 1.3 Structure of the thesis

The following chapter contains the regional context and gives an insight into the history of Rwanda, how it is doing nowadays and its plans for the future concerning ICT. The theoretical framework is described in the third chapter and consists of the Space of Flows theory, the livelihood approach and the mobile phone. The three theoretical aspects are explored further and the conceptual model shows how they are combined for this research. The methodological framework of this research can be found in chapter four, where it is explained how the research is made practically feasible. Chapter five is all about the impact of the mobile phone on the connectivity of people's livelihoods, while chapter six deals with the mobile phone and the mobility side of these livelihoods. The research findings out of these two empirical chapters are connected with the theoretical foundation of this thesis in the final chapter. Final thoughts on the most significant outcomes and a perspective on 'the mobile phone as a tool for development' are also given in this concluding chapter, together with recommendations for further research on all this.

## 2. Rwanda; The land of a Thousand Hills

### 2.1 Introduction

Because of the sensitivity of Rwanda's history and the impact this had on the development of the country, this chapter outlays that history and shows how Rwanda has developed into the country it is nowadays. The chapter reflects on the situation before and after the genocide that took place in 1994 and tries to explain how Rwanda has transformed its rather hopeless perspective into a very promising future.

This central African country, characterized by its mountainous landscape, counts more than 12 million people that live on a surface two-thirds the size of the Netherlands. It is located in the Great Lakes region in Africa, landlocked in between Uganda to the north, Tanzania to the east, Burundi to the south and Democratic Republic Congo to the west. Rwanda is mostly known for the horrific genocide that took place in the 1990s, when an estimated account of 800,000 to 1,000,000 Tutsis and moderate Hutus were killed (3-9-2014, United Nations website). Since the end of the genocide and the war in 1994, Rwanda has rebuild its economy in a remarkable way according to many. Walking through its capital Kigali will give a slightly non-African feel, compared to other African capital cities; most streets are paved, swept and tidy, the traffic obeys the traffic lights and crossing a street is not a matter of life and death. Paul Collier, Director for the Centre for the Study of African Economies at the University of Oxford, says that "Rwanda is the nearest that Africa gets to an East Asian-style 'developmental state', where the government gets serious about trying to grow the economy and where the president runs a tight ship within government built on performance rather than patronage" (16-02-2012, Los Angeles Times website). Out of a completely devastated situation, Rwanda has built itself up again. As a famous Rwandan proverb reads "*You can't know where you're going unless you know where you've come from"* (Tim Lewis, 2013, p. VII), I also think it is important to get an understanding of where Rwanda came from, how it headed towards a civil war and how it rebuild itself again. Therefore I will first give a brief history about Rwanda and then an overview of the current situation, also regarding mobile phones.

### 2.2 History up to the genocide

In his book 'We wish to inform you that tomorrow we will be killed with our families', Philip Gourevitch gives a comprehensive historical overview of the ethnic groups in Rwanda;

> *"With time, Hutus and Tutsis spoke the same language, followed the same religion, intermarried, and lived intermingled without territorial distinctions, on the same hills, sharing the same social and political culture in small chiefdoms... Still, the names Hutu and Tutsi stuck. They had meaning, and though there is no general agreement about what word best describes that meaning – 'classes', 'castes' and 'ranks' are favourites – the source of the distinction is undisputed: Hutus were cultivators and Tutsis were herdsmen. This was the original inequality: cattle are a more valuable asset than produce, and although some Hutus owned cows while some Tutsis tilled the soil, the word Tutsi became synonymous with a political and economic elite"* (1999, p. 24).

In pre-colonial times, this is how Rwandans lived together, under the rule of an ancient dynasty, of which Rwabugiri was one of the last heirs (Gourevitch, 1999). The colonial times eventually ushered in a very different time for Rwandan people. The population was made up out of roughly 85% Hutu,

14% Tutsi and 1% Twa. The existing hierarchy between Hutus and Tutsis meant that a minority group of Tutsis were enforcing a majority group of Hutus. In 1885, Rwanda was designated as a province to German East Africa during a conference in Berlin where European powers regulated the colonisation of Africa. After World War I, Belgium was given control over Rwanda.

The Belgians were convinced by the so-called Hamitic hypothesis, which was developed by Speke in 1863. Gourevitch writes the following about this; "Speke's basic anthropological theory, which he made up out of whole cloth, was that all culture and civilization in central Africa had been introduced by the taller, sharper-featured people, whom he considered to be a Caucasoid tribe of Ethiopian origin, descended from the biblical King David, and therefore a superior race to the native Negroids" (1999, p. 25). This theory was applicable to the Tutsi, who had oval faces, high noses and most importantly for the Hamitic hypothesis, a bridged nose. "The Belgian colonials stuck with the Hamitic myth as their template and, ruling Rwanda more or less as a joint venture with the Roman Catholic Church, they set about radically reengineering Rwandan society along so-called ethnic lines" (Gourevitch, 1999, p. 28). In 1932, the Belgian colonial rule introduced identity cards that distinguished for each individual Rwandan from which group he or she was. After World War II, when the UN started to point at the importance of independence of colonies, "Hutu political activists started calling for majority rule and a 'social revolution' of their own" (Gourevitch, 1999, p. 29). In the following years, tension started to rise between Hutu political activists, who were arguing for democracy, and the ruling Tutsis, who did not want to lose their power. In 1959, an incident happened in which a Hutu political activist was beaten up by Tutsi political activists. It is quite impressive that before 1959 "there had never been systematic political violence recorded between Hutus and Tutsis – anywhere" (Gourevitch, 1999, p. 30), if you consider what happened some 35 years later. After this incident, "Hutus rebelled against the Belgian colonial power and the Tutsi elite, forcing some 150,000 Tutsis to flee to Burundi" (4-9-2014, UN website Rwandan genocide). Belgian colonial rule replaced Tutsi chiefs by Hutu chiefs and became independent in 1962. Gourevitch wrote about this period;

> *"In January of 1961, the Belgians convened a meeting of Rwanda's new Hutu leaders, at which the monarchy was officially abolished and Rwanda was declared a republic. The transitional government was nominally based on a power-sharing arrangement between Hutu and Tutsi parties, but a few months later a UN commission reported that the Rwandan revolution had, in fact, 'brought about the racial dictatorship of one party' and simply replaced 'one type of oppressive regime with another'. The report also warned of the possibility 'that some day we will witness violent reactions on the part of the Tutsis'"* (1999, p. 31).

This led to several serious incidents between Hutus and Tutsis in the following years which mainly saw Tutsi flee to neighbouring countries and estimates say that around 1965, 50% of the former Tutsi population of Rwanda had left and was living in the neighbouring countries (4-9-2014, UN website Rwandan genocide). In 1973, Habyarimana, the army chief of staff, took control of Rwanda and set up a one-party state. In 1987, exiles from Rwanda, by then living in Uganda, gathered together and formed the Rwandan Patriotic Front (RPF). This Tutsi-dominated group is seen "as a political and military movement with the stated aims of securing repatriation of Rwandans in exile and reforming of the Rwandan government, including political power sharing" (4-9-2014, UN website Rwandan genocide). The RPF conducted several attacks from Uganda on Rwanda in the following years,

basically starting a civil war. They were seen as a threat by the ruling Hutu force in Rwanda who certainly did not want to give up their long awaited position. On 6 April 1994, both the presidents of Rwanda and Burundi were killed when the plane that was carrying them was shot down just before landing in Kigali. Hutu leaders blamed the Tutsi for this attack and within hours, the genocide had started. After three horrible months that probably can be best described as hell, the RPF took control of the entire country and ended the genocide and the civil war that took the lives of so many people.

**2.3 Rebuilding and reuniting Rwanda**

It was estimated that directly after the genocide, two million people had fled the country, scared for reprisals of the new RPF-dominated government (5-9-2014, www.rw.undp.org). Directly after the genocide, many exiles (mainly Tutsi who had been living in neighbouring countries for years) returned to Rwanda to rebuild the country from its social and political chaos. About that time, Tony Blair wrote;

> *"There was no grand theory when the new government took power in 1994; the primary concern was to guarantee that the extreme ethnic divisions which caused the genocide would never resurface. Security and stability came first, alongside basic humanitarian relief, and, slowly at first, then with greater speed, improvements in health, education and incomes. There was a belief that by uniting its people behind the common cause of progress, they could construct a new national identity: Rwandan, rather than Hutu or Tutsi"* (6-4-2014, The Guardian; 20 years after the genocide, Rwanda is a beacon of hope).

The United Nations Development Programme sees Rwanda as an example of successful post-war country-building, with a fast growing economic growth enabling Rwanda to make significant progress in social welfare for the Rwandan people. This economic development is a result of socio-economic reforms and investment in the private sector. It shows that Rwanda has used the many international financial aid flows (seen by some as an apology for the international failure of not intervening in the genocide) in a very constructive way. Statistics on poverty in Rwanda show that from 2006 to 2011 the percentage of people living under poverty has dropped with 12%, from 56.7% to 44.9% (5-9-2014, www.rw.undp.org). Ansoms writes about the massive contribution of the international aid flows and states that the "recovery of the Rwandan economy has been exceptional and, after a spectacular post-genocide economic boom, national income has continued to rise steadily" (2009, p. 290). Rwandan people had to live together again, regardless their ethnical background, which no longer mattered. Survivors of the genocide had to live next to people that may have killed some of their families and/or friends. The construction of a new Rwandan identity, which was one of the main policies of president Kagame, also received critique, "since it denies a space for difference and silences criticism" (Asche & Fleischer, 2011, p. 4). Also other policies have their downside, with more critique on political freedom and on judicial procedures, like the gacaca courts, which are community courts. Furthermore, Ansoms points out that in the rural regions of Rwanda, "progress has been limited and has remained concentrated in the hands of a small class of agricultural entrepreneurs, while the majority of Rwandan peasants are confronted with increasingly difficult living conditions" (2009, p. 290).

Back in 2000, the government of Rwanda challenged itself by implementing an ambitious policy; Vision 2020, which is aiming to transform Rwanda from a low-income country into a middle-income country, "in which Rwandans are healthier, educated and generally more prosperous" (Rwanda

Vision 2020, 2000, p. 2). The overall purpose is to transform the country from a low human development, to a medium human development (UNDP; Human Development Index) and Ansoms states that "this is to be done through a radical modernization of the overall social structure, particularly by moving the agricultural sector away from subsistence and towards a more commercial and diversified economy" (2009, p. 291). Another important element in the transformation to a middle-income nation is the modification of the agricultural economy to a knowledge-based economy by developing Rwanda into an information and communication technology (ICT-) hub for central Africa (H. Asche & M. Fleischer, 2011).

### 2.4 Rwanda nowadays

Rwanda is composed of five provinces (North, East, South, West and Kigali) and these are divided in 30 districts, which are further divided in more than 400 sectors. It is a country on relative high altitude (average of +1.600m) with mountains and many hills, from where it earned his nickname; Land of Thousand Hills. With Lake Kivu in the West, the Volcanoes National Park in the North, Akagera National Park in the East and Nyungwe Forest in the South, Rwanda possesses various touristic attractions and offers a great variety of landscapes.


**Map 1: Rwanda, source: http://www.un.org/Depts/Cartographic/map/profile/rwanda.pdf**

The population of Rwanda has reached over 12 million (CIA fact book) of which 1 million is living in its capital, Kigali. The total urban population accounts for 19.1% of the total population, about 2.4 million people, and with an annual urbanisation rate of 4.5%, Rwanda is one of the fastest urbanising countries in the world. Its GDP is $ 7.7 billion (2013) and GDP per capita is $ 1,500 (2012) and 44.9% of the people is living under the poverty line, which shows that Rwanda is still a poor country. 53.3% of the GDP is composed by the services-sector, 14.8% by the industrial sector and 31.9% by the

agricultural sector. Around 90% of the population is engaged in this (mainly subsistence) agricultural sector.

With its large population and relative small size, Rwanda has the highest population density of Africa (477 inhabitants per square kilometre, source: data.worldbank.org), which directly leads us to one of the major problems in the country; overpopulation. In the rural areas, quality of the land deteriorates because of erosion and intensive use, as most farmers try to produce at least enough crops for their own families to survive. As farmers divide their family land between their children through an inheritance system, the farmland becomes more and more fragmented. As a result, farmers are searching for new plots to cultivate; steep hillsides and other almost unsuitable, but available, lands are transformed in agricultural land, with the result of more erosion and thus also fragmentation. With the population growing at an estimated rate of 2.63% in 2014, there is increasing pressure on food security. For farmers it will be more difficult to rely on their subsistent agriculture and many young people will not see a future in the rural areas; they migrate to urban areas. The issue of food security is connected with the overpopulation of Rwanda and these are some of the challenges faced by the government of Rwanda.

**2.5 Rwanda and ICT**

With the transformation to a ICT-hub as one of the policies of the Rwandan government outlined in Vision 2020, it is important to see to which extent ICT is already present in the country. The number of ATMs (per 100,000 adults) went up from only 1 in 2009 to 5 in 2012 (World Bank) and Rwanda is connected to international sea cables by the deployment of a national fibre-optic network. This network functions as the ICT backbone by connecting Rwandan people to global networks through the increasing access to the internet (16-9-2014, www.un.org; big dreams for Rwanda's ICT sector). In 2009 the number of internet subscribers was 147,837 for the whole country and this has increased to over 2.5 million internet subscribers in 2014, with the internet penetration rate being defined at 25% while this was only 1.6% in 2009 (RURA, June 2014). The access to internet is increased furthermore by a project of South Korea's largest telecom company that will develop a 4G broadband network across Rwanda, which is very advanced, even for western standards. Data from the World Bank shows that in 2013 almost 57 per 100 people have mobile cellular telephone subscriptions in Rwanda. Figures published by the Rwanda Utilities Regulatory Authority (RURA) show that in June 2014 there are already 7.2 million mobile telephone subscribers.

The statistics on mobile phone use should be viewed with caution, as they do not tell the whole story. There are different organizations and researchers involved in the publication of statistics which automatically generates different definitions about these statistics. Furthermore, it is very difficult to get exact numbers of people that are using a mobile phone, "especially in Africa, with its culture of sharing, mobile phones are often divided among people" (James & Versteeg, 2006, p. 118). It is thus possible that, when statistics show that 57 out of 100 people have mobile cellular subscriptions, the number of people using a mobile phone is actually higher. Likewise, it is possible that one individual has two or even more SIM-cards and thus two or more mobile cellular subscriptions. This puts the total number of people with a mobile cellular subscription back down. Another difference between someone being subscribed to a mobile phone, and a user of a mobile phone is the fact that there are many people in developing countries who do not have a mobile phone, but do have a SIM-card. This brings us back to the sharing of mobile phones with the example of a household, where there is only

one mobile phone, but for instance four people possessing their own SIM-card. Ultimately, only one member of the household can then be considered as a mobile phone user.

These ambiguities however, do not diminish the fact that the mobile phone is becoming increasingly available for people in Rwanda. Seeing how this works out for the people in rural Rwanda is even more interesting, because transforming the agricultural based economy into a knowledge based one starts with them, considering that they stand for the majority of the population. The presence of the mobile phone and its impact in rural Rwanda can tell us a lot about the current status of the economic and societal transformation the government is aiming at with Vision 2020.

# 3. Theoretical Framework

This thesis starts from the notion that the space of flows is a new reality impacting the everyday life of African people. The first paragraph discusses the theoretical foundations of the space of flows as an important component of Manuel Castells' Information Age. The next step is to link the space of flows with livelihood research, or in other words, with the everyday life of these African people. Therefore I explain the most important aspects of the livelihood approach, how it started and its development as a tool for poverty reduction in the second paragraph. Subsequently, the third section focuses on the role of mobile telephony on all this and gives an overview of what we already know about the mobile phone and its impact in the developing world. The theoretical discussions are brought together in a conceptual model that links the space of flows, the livelihood approach and the use of the mobile phone and is further explained in the concluding paragraph of this chapter.

### 3.1 The Space of Flows

The overlapping theory used in this research is the 'Space of Flows' theory by Castells, which is a way of explaining the dynamic interactions in the so-called 'Information Age' (Castells, 1996). This information age, which relates to the rise of the knowledge economy in our globalising world, is the central topic in a trilogy of books that Castells has written about the new role of information in society. In this society, 'informationalism' can be seen "as the new material, technological basis of economic activity and social organization" (Castells, 2010, p. 14). According to Castells (1997), a networking logic within that informational driven society has led to a network society as the dominant social structure. Thanks to the many developments in informational and communicational technology that have ultimately characterized the information age, a new dimension of space and time was created around which the network society was organized; the Space of Flows (Castells, 1997). The concept of space of flows is thus part of a larger theoretical framework that deals with globalisation, informationalism, communication technologies, network societies and new dimensions of time and space.

The definition of 'space of flows' according to Castells is; "the material organization of time-sharing social practices that work through flows" (1997, p. 14). In other words, as the time-sharing social practices are no longer, or less dependent on the actual space people are in, the social practices increasingly take place through *flows*, which *connect* these different spaces. For these time-sharing social practices, certain tools and conditions are required which can transform these practices into flows. According to Castells, the space of flows consists of three layers; (1) electronic exchange, (2) the nodes and hubs and (3) spatial domination by elites. The first layer can be characterized as "a technological infrastructure of information systems, telecommunications, and transportation lines" (Castells, 1999, p. 295). The particular function of the space of flows is determined by the content of these information systems, and "the goals and task of each network configurate a different space of flows" (p. 295). The technological infrastructure basically ensures that a space of flows exists and that someone can act in that space. The tangible part of the infrastructure consist of things as computers and satellites, while the intangible aspects are formed by media as the internet and e-mailing. The already mentioned information systems and telecommunications then make use of this infrastructure to send their particular flows. For financial oriented information systems the flows will highly likely consist out of money transfers or at least financially related issues. For commercial oriented information systems the flows will, for instance, consist of consumer related information that can increase the profit in certain markets. This will apply for all types of flows and in this way,

the content of the flow, and thus the content of the information system will determine the particular function of the space of flows. Thanks to increasing possibilities and developments on the tangible side of technological infrastructure, the intangible technological infrastructure has grown enormously and this is exactly where I see the mobile phone coming into the picture. The mobile phone can be seen as a new sort of technological infrastructure which connects different places through the space of the mobile phone network, with the additional advantage that geographical proximity to the technological network is constantly guaranteed, as you are carrying your mobile phone with you. Among other things, this has resulted in a massive increase of flows that are even harder to define as financial, commercial, social or whatsoever. As the mobile phone becomes more and more universal, the space of flows, in which it lets people act in, will become increasingly multi-interpretable.

The second layer, the nodes and hubs, "structure the connections, and the key activities in a given locale or locales" (p. 295). According to Castells (1999);

> *"hubs are communication sites that organize exchanges of all kinds, as they increasingly are interconnected and spatially related. However, what characterizes the new role of these hubs and nodes is that they are dependent on the network, and that they are sites to process signals that do not originate from any specific place but from endless recurrent interactions in the network"* (p. 296).

The nodes and hubs Castells talks about can be seen as the point or *locale*, where a flow is directed into the space of flows. According to Stalder (2006), "the interlocking clusters of financial and administrative services created and managed in global cities are the best analyzed example" (p. 148). These services provide the needed material and social basis that make them the major nodes in the space of flows with financial and administrative functions. In the same way, the main global universities are structuring the spaces of flows with academic and innovative functions, and political institutions are the nodes for the space of flows where policies are conceived. As already stated by Castells, the nodes and hubs have grown into a new role where they are dependent on their network instead of their *locale*. In my opinion, the mobile phone has played a significant part in this change, as it has made nodes and hubs much more dispersed. Nowadays, a businessman can act in his financial space of flows through his mobile phone without being actually present in his office, which is located in the financial node of a business centre. Basically, his mobile phone has become the node that makes it possible for him to act in his financial network. Considering the mobile phone has become widely available to many in the last decades, it can be said that many new hubs and nodes have emerged.

The third and final layer refers to the elites that exercise directional functions around that space in which the space of flows is acting. These elites cannot become flows themselves, but are actually the producers of the cultural codes which enable different actors to communicate through the space of flows on the basis of a mutual accepted social structure. Stalder elaborates further on this and its applicability nowadays and says about the third layer, which refers to the elites that exercise directional functions around the space of flows, that "much has changed over the last decade. With the development of the internet into a mass medium, the range of people who can access the global communication infrastructure has grown exponentially" (2006, p. 151). Elites are thus no longer

dominating this new space as new technological developments have made it much easier for anyone to act in the space of flows.

In a still lively debate on the space of flows, it is stated that Castells contributed to confusion of the concept 'space of flows', by giving alternative definitions and interpretations of his concept (Sokol et al, 2008). His theory is, in my opinion, multi-interpretable when you consider all the developments that have taken place in communication technologies, from the fixed telephone-line up to the mobile phone and the many different communication possibilities the internet gives us nowadays. With these developments (but also because of transport developments), people's relation with space and time changed dramatically. In his book 'Manuel Castells and the Theory of the Network Society', Stalder (2006) also writes about this 'time/space compression' (by David Harvey) and sees the space of flows theory by Castells as a result of this. Stalder says about Castells that;

> *"he suggests that there is a historical limit to the process of 'time/space compression'. Contrary to postmodern visions of finality, time and space are fundamental categories of social life and cannot disappear. Computer networks are not black holes. At one point, the negative, quantitative dynamic of compression (less space, less time) turns into a qualitatively new condition (a new type of space/time)"* (2006, p. 146).

Fortunati (2002) stated that these developments "increased the level of social productivity, not only rationalizing and therefore making the organization of the world of work and the domestic sphere more productive but also constructing new perceptions and categories of time and space" (p. 514). The 'space of flows' of Castells can be categorized as a new perception and a new category of time and space in the everyday life as it changes the perception of space and time. According to Fortunati, people actually try to influence these perceptions as these "modern-day citizens 'work' space and time to try to increase them, seeing that they are scarce resources" (p. 514). Furthermore she states that "space has widened out horizontally, lengthened out vertically, and at the same time is perceived as a background; while time is experienced in all its extensions and expanded in thickness" (p. 514). The mobile phone is in the middle of this all.

**3.2 A livelihood perspective**

The mobile phone is generating new perceptions of space and time all over the world and it seems everyone wants to have a mobile phone to 'work' space and time and increase these scarce resources. Which is not surprising to Fortunati (2002), as she sees the mobile phone as a tool,

> *"that enables people, when they perceive the surrounding environment as extraneous to them, to contact somebody of their intimate circle, that is, to activate the reassuring immediacy of the place, strengthening communicative immediacy with their social networks by means of the mobile"* (p. 515).

This is also mentioned by Stalder (2006), who states that "mobile technologies allow people to develop new spatial practices by coordinating each other, ad hoc, through the space of flows, congregating and dispersing in self-selected rhythms" (p. 151). The social and economic potential of the mobile phone is enormous, but then again, it is not about using a mobile phone, but how that mobile phone is used.

To understand how the space of flows, with the mobile phone at the very core of it, impacts the daily life of Africans we can rely on so-called livelihood research. With a focus on everyday production and social dynamics, livelihood research has enriched development geography profoundly as it has been developed by researchers in order to get better insights on people's struggle to get out of poverty. Before, there was an understanding of poor people being passive victims of the fixed structures in societies and the focus was on the economic perspective of the livelihood. This changed when "after the structural perspective of *dependencia* and neo-Marxism of the 1970s and 1980s, a more productive actor-oriented perspective was adopted in development studies. A micro-orientation became predominant, accompanied by a clear focus on local actors, often households" (de Haan & Zoomers, 2005, p. 28) and "it was increasingly acknowledged that poor people were able to adapt or respond to changing circumstances" (p. 28). Many studies of that time were focussed on so called survival strategies of households, which "were more sociologically than economically inspired and were mainly interested in the micro-social behaviour of poor people in coping with and surviving different types of crises, such as falls in prices, droughts and famines" (de Haan & Zoomers, 2005, p. 29). This however, is not enough to fully utilize the livelihood approach, as there is more to a livelihood; "the major shortcoming of structural-functional and economic approaches to the household is the neglect of the role of ideology" (Guyer and Peters, 1987, cited in de Haan & Zoomers, 2005, p. 29). This ideology of a livelihood was already described by Wallmann (1984);

> *"Livelihood is never just a matter of finding or making shelter, transacting money, getting food to put on the family table or to exchange on the market place. It is equally a matter of ownership and circulation of information, the management of skills and relationships and the affirmation of personal significance... and group identity. The tasks of meeting obligations, of security, identity and status, and organizing time are as crucial to livelihood as bread and shelter"* (cited in de Haan & Zoomers, 2005, p. 32).

The livelihood development is the translation of the struggle of low-income households to get out of poverty and according to Chambers and Conway, "a livelihood refers to the means of gaining a living, including livelihood capabilities, tangible assets, such as stores and resources, and intangible assets, such as claims and access" (cited in de Haan & Zoomers, 2005, p. 27). This is acknowledged by de Haan and Zoomers (2003), who wrote that a "livelihood is multidimensional, covering not only economic, but also political, cultural, social and ecological aspects" (p. 350). From analysing mainly the household's economic activities and behaviour, the livelihood approach has now developed itself into a contemporary framework that covers all the multidimensional aspects of a livelihood.

Trends of globalisation have changed the way how livelihoods are to be considered, as the local perspective of a livelihood is increasingly influenced by the growing connectivity of that locality with any other place, and thus opportunities, in the world. Basically, the livelihoods of households are now increasingly developed in the space of flows; where new communication technologies allow people to cover multiple locales and dimensions of their livelihood within the same time. This has many effects on the way we look at households and their livelihoods. De Haan and Zoomers (2003) agree and say that "the old assumption of a nuclear or extended family – comprising a male breadwinner, his wife who may be non-working, dependent children, and other family members – needs to be revised" (p. 353). The important notion here is that household members still form a household together, but that they are acting more and more independently as a result of the globalisation. This decomposition of households is pushing people to more individuality, as extended

families are not that common anymore and single-person households (mainly female-headed) are also increasing. An indirect result of this is that the internal cohesion within a household is affected, as the individual needs can conflict with the family needs and the other way around. This decomposition of the household has further effects on the local community it houses in, as community life is becoming less and less important.

The result of all this, is an increasing image of livelihoods focussing on multi-tasking and income diversification. De Haan and Zoomers (2003) write that "multi-tasking is seen as a way to compensate for insufficient income or temporary crisis situations" and income "diversification does not mean having an occasional earning besides a main activity: it means multiple income sources" (p. 356). They state that poor households have to be inventive as poverty forces them to "intensify strategies for generating income, using available labour and resources as fully as possible" (p. 356). This has led to a transformation of the image of rural households being purely agricultural active into households that are also active in other non-agricultural sectors. Temporary migration, being involved in trade, performing different crafts and working in (temporary) wage labour can all be found within one household that is also agricultural active (Ellis, 1998, 2000; de Haan & Zoomers, 2003). According to Ellis (2000), "livelihood diversification reflects the precariousness of rural survival in the contemporary rural economies of low income developing countries" (p. 299). With this diversification and the increasing individualisation of households, it is important to have a corresponding agreement of whom and what still belongs to the same household.

The whole development of livelihoods basically comes together in the observation that livelihoods are increasingly organised and functioning through the networks they are engaged in, which comes together with the network society that comes out of Castells 'Information Age' (1996). In other words, a household is dependent on the connectivity of those networks with opportunities and developments that benefit their own livelihood. This connectivity is highly influenced by the use of a mobile phone as this makes it possible to act in a network in the first place, and it connects different levels of scale. The role of the mobile phone in the further diversification and multi-locality of livelihoods must have been a rather interesting one, as we have seen that the mobile phone makes it easier for people to live further away from family (for example for temporary employment), while at the same time it is easier for them to contribute to the household by sending money through Mobile Money systems.

As the emphasis of this research is on the impact of the mobile phone on the development of people's livelihoods, it is interesting to know that "rapid urbanisation and the improvement of communications and transport technology have resulted in a significant increase of mobility" (De Haan & Zoomers, 2003, p. 358). This has influenced the level of scale, as households are no longer grounded to one local context anymore; they have increasingly become multi-local and the local networks they are engaged in are increasingly connected to meso and macro level (de Haan & Zoomers, 2003). Understanding the multi-local nature of livelihoods is an important way of researching "the diverse mobilities and connections of households in their efforts to overcome poverty" (van Lindert et al, 2013, p. 7). Knowing that a households' livelihood is composed of five forms of capital, namely; natural, human, financial, physical and social capital (van Lindert et al, 2013), it can be said that the mobile phone and its role in changing the significance of connectivity and mobility, will have major effects on these five forms of capital. This thesis will mainly focus on

these two components of the livelihood (connectivity and mobility) and in so doing, it concentrates on the economic and social dimensions of a livelihood.

### 3.3 The mobile phone and its impact: What we already know?

Many articles have been written and a lot of research has already been done concerning the mobile phone and its impact in general and on developing countries. An important notion here is that earlier publications on mobile phone technology and its impact on several issues may already be outdated, as the expanding usage of the mobile phone can reveal different outcomes over time. However, it is important to get a good overview of all the necessary information that has already come out of research on the mobile phone.

#### 3.3.1 Mobile phone identity

After research on the mobile phone in Jamaica, Horst and Miller (2005) came up with an new research tool: "the content of a phone is a way to interpret a person's social network, both hidden and overt" (De Bruijn, et al., 2009). This makes a mobile phone and its content a reflection of the identity of the user of that mobile phone. People's social networks can be explored by looking up someone's contact list and this can reveal the everyday life of that particular phone user. In addition, the different ways of how a mobile phone is used also reveals how someone sees his mobile phone, for instance; for social purposes only or also for economic purposes, having it short-term or for the longer term. In her research, Pfaff (2009) focussed on one particular mobile phone and traced its different owners and users over a period of 18 months and she found that;

> *"the different meaning that a mobile phone incorporates express themselves in the practices in which they are embedded. Accompanying this particular mobile phone entails examining the phone's relationships to the different people to whom it has belonged on its journey and to see what it becomes in respect to the different ways in which it is dealt with"* (p. 139).

Furthermore, she found that the mobile phone is clearly more "than just a tool for calling, text messaging, music, photos and phone numbers. It is the device itself as well as its attributes that play a role in processes of individual expression and identification" (2009, p. 147). The same mobile phone can give many different identities to different owners as it is the owner's own situation which gives meaning to the mobile phone. But it should be noticed that a mobile phone can never give a complete overview of someone's social network or identity in a developing country, as those people's social networks also comprise of people who do not have a mobile phone. The identity forming capacity of the mobile phone gives poor people the chance to finally develop an individual identity, which they can express by choosing a particular model, customizing the device to their own desire and for instance by selecting their favourite ringtone for incoming calls. Having their own mobile phone number can mean a lot to them, as many of these poor people are not registered at a formal address. The mobile phone number basically takes over the role of an address, as their individual phone number forms the 'location' where they can be reached. This also relates to the development of individualisation in a household, where a mobile phone makes it possible for a household member to be considered by others as an individual with his or her own identity. This gives people the feeling that they matter, which will probably increase their self-confidence. In addition, the high degree of connectivity that the mobile phone provides, increases their feeling of safety, as people feel more secure when they know that they are able to contact someone (a friend, or in worst case scenarios; the police) immediately. The individual use of the mobile phone also

offers privacy to many; before, people had to make phone calls with public phones, with other people around them who were able to follow the conversation. With a mobile phone someone is able to be in a private setting to discuss intimate issues or problems. This all comes together in the concept of 'personal empowerment' (Katz, 2006), which entails that the mobile phone increases people's mobility as they feel safer, more secure and thus freer to go to other places (Pelckmans, 2009).

### 3.3.2 More or less mobile, more or less connected?

On the one hand it seems that mobile phones are increasing someone's mobility as people feel freer to travel, but when we look at research by Pelckmans (2009) we see a mobile phone can also decrease someone´s mobility. Pelckmans did research about how the mobile phone is reshaping anthropological research, and she says that having a mobile phone ensured her to travel less during fieldwork: "the mobile phone has made it easier to obtain access, establish new contacts and get back to people without taking buses, cabs or motorcycles" (2009, p. 31). At the same time, "meeting and visiting someone still adds more value to the kind of contact established, mutual respect and knowledge about each other" (2009, p. 32). The same holds for people living in developing countries who have access to a mobile phone, as it is not hard to imagine that their mobility is impacted by the increased connectivity the mobile phone provides them. As an example; a person without a mobile phone living in a village somewhere in rural Africa who travels to his uncle every half a year to ask him for support. He has to travel for a whole day and has to pay for transport. Next to his uncle, he has other relatives and friends who live further away and who he visits a couple of times a year to get to know how everyone is doing. Then he buys himself a mobile phone and during the same period his uncle and some of his other relatives and friends buy one too. That person is now able to get in contact with his family and friends without travelling, saving him time and money for transport. This is also the case with people who lived in rural areas before, but moved to urban areas to seek a job opportunity, or people that migrated to another country because of diverse reasons. They are all directly connected with their 'home', assuming all actors have a mobile phone. For someone coming from a rural area, who is now living in a city, it is not necessary anymore to travel regularly to his home town to meet family he left behind; he just keeps them updated by giving them a couple of phone calls during the week. Many mobility patterns are affected by the use of the mobile phone; instead of visiting each other, people will just call each other. But this does not have solely positive outcomes; "ease of communication comes with heightened demands and expectations of remittances on the part of relations back home" (de Bruijn et al., 2009, p. 16).

This potential mobility reducing effect has much to do with the actual purpose of the communication. If it is merely for getting information about how relatives and friends are doing, it is obvious that mobility will be substituted by connectivity through mobile phones, although face-to-face contact should be valued (de Bruijn et al., Pelckmans, Molony; 2009). For events like a wedding or a funeral, people will always tend to travel to their family or friends, especially in developing countries where such events have high traditional value. For economic purposes it is interesting to know when connectivity becomes the substitution for mobility. If someone needs to get information about a market, a phone call with someone present at that market will do, but if a farmer wants to bring his produce to the market, he really has to bring it there, which involves mobility. Mobile phones will thus never completely replace the necessity to move, but it definitely makes it less likely to move in certain situations. The other way around, it is also thinkable that a mobile phone makes people move more instead of less, as we also saw with the concept of 'personal empowerment'

(Katz, 2006). For instance, when a farmer is selling his produce at only two market places, and now the mobile phone makes it possible for him to reach more market places (as he can receive information about prices via the mobile phone), he will probably also travel to those other markets to sell his goods. He then travels more, but knows that at the other markets he can get more money for his goods, which makes it worthwhile to travel more. It is then questionable how the costs for airtime, for receiving that information about those market prices, are included in the whole assessment of it being worthwhile. As this example contained an economic situation, there is a difference with social situations concerning the costs for airtime, as research showed that people in developing countries are quite creative in avoiding costs for airtime in particular situations; instead of calling someone, they 'beep' someone. James and Versteeg (2007) write about this;

> *"for instance, beeping once might mean that the person is at a certain meeting point, whereas beeping twice might mean that there is a half-an-hour delay. But one beep might also be a signal for saying 'Hello'. In this fashion, using a mobile phone becomes costless"* (p. 123).

This social practice of beeping, or 'flashing', has also been studied by Donner (2007) and he found several rules covering the process; "regarding the most common kind of beep – the callback beep – there are clear conventions as to who should and should not beep. The negotiation centers on who should pay for the voice call" (p. 7), so the person who is considered to be richer can expect several callback beeps. According to Pelckmans (2009), "flashing practices definitely influence and (re)produce power relations among people" (p. 29) and she says that "social hierarchies reveal not only *who* is in charge of phone credit but also *how* credit is purchased and exchanged" (p. 29).

### 3.3.3 Beyond the mobile phone

Next to the new developments in connectivity and mobility, there is also a great benefit from the use of a mobile phone through the already countless mobile applications. In its report 'Sub-Saharan Africa Mobile Economy 2013', the GSMA, who represents the interests of mobile operators worldwide, sets out these applications in the following groups: mHealth, mEducation, mAgriculture and Mobile Money. As many patients in developing countries do not have access to healthcare services, mHealth provides some sort of outcome. An example of mHealth is the application 'Mobile-baby', which "allows medical practitioners to send ultrasound images, video clips and 3D scans directly from ultrasound machines to mobile phones via SMS, MMS and email, providing real-time remote medical diagnostics" (GSMA 2013, p. 59). Knowing that access to education is also a problem in developing countries, mEducation provides some cover for this as the example of 'MoMaths' shows; "Nokia, MTN and Cell C have partnered to enable teenagers access to short math courses and a database of 10,000 questions" (GSMA 2013, p. 60). Agricultural activities can be further developed with access to new information, which can be provided by mAgriculture programmes. GSMA states that "mobile devices can be used to improve logistics by matching supply with demand, to supply farmers with relevant information on agricultural techniques and local weather information, to provide access to market prices and to deliver financial services" (2013, p. 61). The mobile application with probably the most significant impact though, is Mobile Money. This makes the access to financial services in developing countries an actual feasibility. People who have a mobile phone and are registered with a mobile money service can receive or send money to other people who also have a mobile money account. As GSMA explains, "the technology of mobile money allows for the digital conversion of cash to electronic value ('e-money')". Furthermore, "mobile technology

is capable of extending the reach of financial services through products like insurance, credit and savings" (2013, p. 62). In their report, Aker and Mbiti (2010) provide a significant explanation of Mobile Money:

> *"Since 2005, mobile financial applications (known as 'm-money' or 'm-banking') have emerged in a variety of developing countries. The systems usually involve a set of applications that facilitate a variety of financial transactions via mobile phone, including transmitting airtime, paying bills and transferring money between individuals... Most m-money systems allow the user to store value in an account accessible by the handset, convert cash in and out of the stored value account, and transfer value between users by using a set of text messages, menu commands, and personal identification numbers (PINs)"* (p. 19).

These financial applications have multiple effects on people in developing countries. Considering many people in those countries do not have a formal address, it is impossible for them to subscribe to a formal bank account. Furthermore, considering that banks are normally situated in urban areas, people from rural areas are limited even further in reaching those banks. But with a mobile phone they are able to give themselves a registered identity, as we saw before, and also get access to financial services, like savings and transmitting money. Managing your own financial assets, for instance saving money on your own mobile money account, can push the individualisation in society even further. It may be possible that a household member will start to dictate his own personal income and expenditure without involvement of the head of the household. On the other hand, it is possible that, through the increased connectivity and possibilities to share information, people's financial dealings are shared more equally within a household. Sending money through mobile money systems is very important in this aspect, as it has made it much easier for someone, for example, temporarily living and working in the city to send money to his household that is still situated in the rural areas. Next to it being easier and faster, there is also the possibility for people to send only small amounts of money to each other on a more regular basis, because transaction costs have decreased. Remittances are mostly sent through banks as Western Union, where transaction costs are derived from the amount that is sent; the higher the amount, the lower the costs for transaction. In developing countries, where there is low access to these financial services, "households delivered remittances via hand or informally through friends or bus drivers" (Jack & Suri, 2013, p. 1), which was "expensive, fraught with delays, and involved substantial losses due to theft" (ibid.). Sending money via the mobile phone makes it possible to reduce transaction costs, as "not only are the actual monetary costs of the transfers lower, but the safety and certainty of the process has meant substantial reductions in the costs of sending and receiving money"(ibid.). Next to sending smaller amounts on a more regularly basis, the mobile phone also gives the possibility of immediate demand and supply. For example, when a household is suddenly struggling because their crops failed, they can easily send a text message to someone asking for money to support them. Critical situations of a households' livelihood can then be overcome more easily with the help of a mobile phone and usage of mobile money systems. It is important to know if people use a mobile phone with some sort of underlying purpose and how they then actually use it. The effects of this on the development of the households' livelihood are the actual impacts of the mobile phone.

### 3.4 Conclusion: livelihood development in the space of flows

The conceptual model in this concluding paragraph shows how the three elements in this research are linked. The space of flows is the overarching concept in this framework and can be seen as the virtual place where Rwandan households with a mobile phone are now partly developing their livelihoods in.

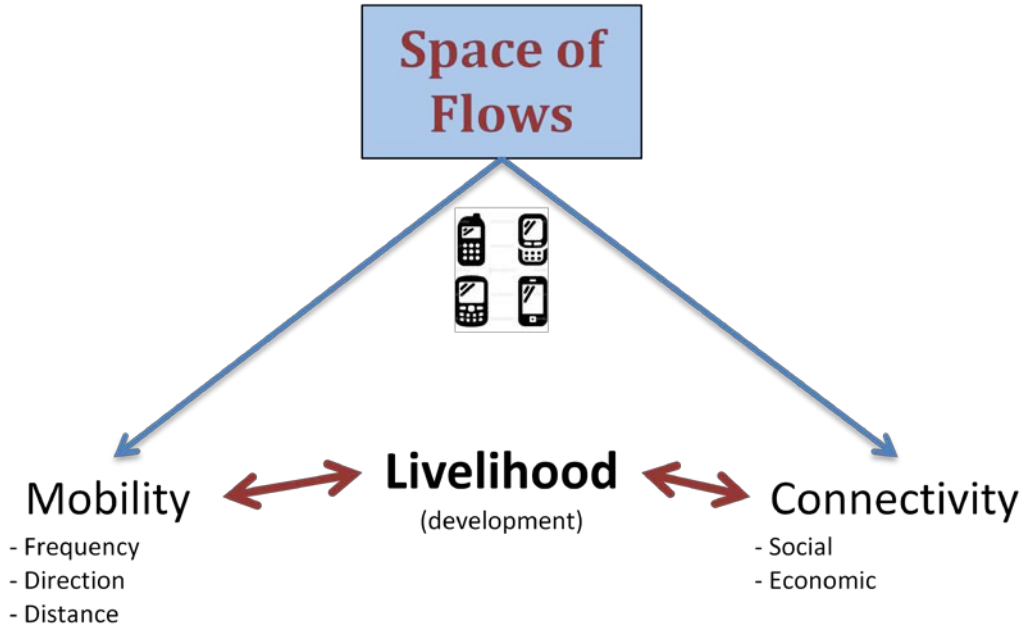


Figure 3.1: Conceptual model

With this as a starting point, we can already expect to find two different households; those with a mobile phone and those without one. In the first instance we could say that those who have a mobile phone are present in the space of flows, while the households without a mobile phone are probably excluded from that space of flows, as far as mobile phones are taken into account. But we have already seen that having a mobile phone is something different than using a mobile phone, especially with the 'culture of sharing' in Africa. Furthermore, considering the rapid rise of the mobile phone in rural areas of Rwanda, it is safe to say that nowadays every household is rubbing shoulders with the effects of mobile phones. Nonetheless, it is still possible for a household to be excluded from the space of flows, but not, or not yet, having a mobile phone in a society where it is becoming 'a basic necessity' may have diverse effects on the development of that households' livelihood. We have seen that a livelihood has become much dependent on its connectivity and mobility as a result of trends in globalisation that created a new social structure based on networking. For people in rural Rwanda the possibility of networking is greatly influenced by the usage of a mobile phone, as the mobile phone is in fact their access to the space of flows, especially considering that it is their first encounter with a communication technology that can have such an impact on connectivity and mobility.

The connectivity side of a household contains all the connections that in one way or another help to develop the households' livelihood. Next to the real-life, face-to-face connections that people have with neighbours, community members, friends, relatives, etcetera; the mobile phone has created a new dimension for this. This direct connection over distance provides a whole new scale of

opportunities for households in rural Rwanda as they can connect and be connected with people in a *space* where *place* does not matter anymore. The networking logic of this *space* gives them even more opportunities to connect with other people as different networks and levels of scale are linked with each other easily. Next to being connected with other people, the mobile phone gives the possibility of having access to certain applications, which, as we have seen, can provide detailed information about a wide variety of subjects (mHealth, mEducation, mAgriculture, Mobile Money). This part of the conceptual model will thus deal with what effect the altered sense of connectivity has on the development of livelihoods in rural Rwanda.

The other part of the conceptual model focuses on the frequency, direction and distance of the mobility of a households' livelihood. This entails all the movements and travels that a household member undertakes for the development of its livelihood. There can be multiple and overlapping reasons to travel (economic, social, health care, education, religious, etcetera) and probably some of these travels have a certain pattern. The frequency of travelling is something that can be affected by a mobile phone, as we saw that being directly connected with someone over large distances can substitute the urge to travel to that person. The other way around, a mobile phone can increase someone's mobility as there are now more opportunities to travel for, which also impact the distance and direction of mobility. It may be possible that someone's mobility was only taking place in rural settings, while now, a mobile phone has connected him with someone in a city nearby, which suddenly creates a rural-urban mobility instead of only a rural-rural mobility. This diversification in travels impacts the mobility of a livelihood to a great extent. This part of the conceptual model thus focuses on the changing role of mobility and the effect this has on the development of rural livelihoods in Rwanda.

It should be noticed that both concepts of connectivity and mobility are strongly interlinked with each other in a livelihood, but the subdivision of the livelihood in these two concepts is made to get a clearer picture of the actual impact of the mobile phone on a households' livelihood in rural Rwanda.

# 4. Methodology

The empirical part of this research is based on fieldwork carried out in rural areas in the north-west and south-east of Rwanda between March and May 2014. The fieldwork was carried out according to predefined methods and to give a clear overview of this methodology, this chapter will cover the methodological framework of the research. The first paragraph contains a further elaboration on the research objective and main question, which is subdivided in a couple of specific questions. The research areas where the data collection took place are illustrated in the following section. To be able to reach the research objective, a fieldwork strategy is set up, which contains details about the data collection and is described in the third paragraph. The fourth section deals with limitations that came out of the fieldwork and the last section will give a general overview of the sample.

### 4.1 Research objective and questions

The main objective of this research is; *To understand how Rwandan people take part in the space of flows by investigating how the use of the mobile phone affects their daily livelihoods in terms of connectivity and mobility.* The key to investigate how the mobile phone is affecting the connectivity and mobility of livelihoods in rural Rwanda is by knowing how Rwandan people are appropriating this communicational technology in such a way that it benefits their livelihood development. This technology appropriation is defined by Carrol et al. (2002) as "the way that users evaluate and adopt, adapt and integrate a technology into their everyday practices" (p. 2). For Sey (2011), the appropriation of a technology is influenced by a certain unpredictability which is the result of human interaction with that technology. She says that;

> *"while some anticipate that mobile phones will be used prominently to generate benefits in traditional development domains (income, health, politics, etc), it is important to accept that users often choose to appropriate phones in ways that do not fall into such neat categories" (2011, p. 379).*

This is one of the reasons for focusing on the components of connectivity and mobility of a livelihood, instead of focusing on the actual impact of the mobile phone on the 'traditional development domains'. This will provide an answer on the main research question; *how are mobile phones enabling Rwandan people to take part in the space of flows and how does this impact their livelihoods in terms of connectivity and mobility?* The main question is divided in the following sub-questions that are covered one by one in the empirical chapters;

*What is the impact of the mobile phone on the connectivity of a rural households' livelihood in Rwanda?*

Getting information about a households network is one of the main purposes of this question as it will give an indication of which people are connected to that household member and for what reasons. This will provide important information on if and how the household is coping with their struggle against poverty. For households with a mobile phone it will be useful to see how their network has changed and if there have been structural changes in their network that have provided significant development to their livelihood. The other way around, it is important to see what happens to the connectivity of households that do not have a mobile phone. It is possible that they are marginalized even further as they do not have the same network opportunities like their neighbours with a mobile phone.

*What is the impact of the mobile phone on the mobility of a rural households' livelihood in Rwanda?* The daily mobility and yearly travels of a household member tell a lot about the situation his or her household is in. They basically tell where that particular person goes in order to satisfy the needs and wants of the household. Experiences of people are gathered to get to know how they see the impact of the mobile phone on the aspects of frequency, direction and distance of their everyday mobility and yearly travels. Here, too, it is important to see how the presence of the mobile phone in society is affecting the households that do not have a mobile phone.

*Is having a mobile phone a motor for development of a households' livelihood in rural Rwanda?* Considering all the above, it is interesting to see if the mobile phone is really pulling people out of poverty. The short and longer term effects of the mobile phone are important in this as they can show if the mobile phone brings structural change to someone's livelihood or only provides minor changes. Also other effects of the mobile phone, which are not covered by the connectivity or mobility section, will be outlined in order to answer this question.

**4.2 Research areas**

A total number of 112 questionnaires were conducted in the period between March and the end of May 2014. These were conducted among 20 different villages in the two districts of Nyabihu (see section 4.2.1), in the north-west of Rwanda, and Bugesera (see section 4.2.2), in south-eastern Rwanda. Nyabihu has two larger towns in its near that both have around 100,000 inhabitants; Musanze (also known as Ruhengeri) and Gisenyi. But the district self is a solely rural area. For Bugesera, Kigali is an hour drive away and the town of Nyamata, with approximately 35,000 inhabitants, is situated in the district. Apart from this, Bugesera is a typical rural area. This ensures that the collected data gives a reliable image of the impact of the mobile phone on livelihoods in rural Rwanda, as Nyabihu and Bugesera are the translation of 'rural Rwanda' for this research. As already mentioned in the first chapter (see section 1.1.1), this research takes place within the RurbanAfrica project and within that project, the districts of Nyabihu and Bugesera were already designated as two of the rural research areas for research in Rwanda. Both districts are covered in the next two sections.

4.2.1 Nyabihu

This north-western district is part of the Western Province and is composed of 12 sectors that are further divided in 73 cells and 473 villages with a total population of 295,000 (density is 550 inhabitants per square kilometre). Approximately 90% of its total surface of 530 km² is categorized as rugged mountains. Almost 75% of the work force is engaged in subsistence agriculture (mostly cultivation) and 50% of them have a plot of land which is less than 0.3 ha. The industrial sector of Nyabihu is represented with one tea factory, one small unit of coffee washing and two small banana wine production units. A centre of milk collection and cheese production units are under construction according to the District Development Plan (DDP Nyabihu, 2013). Only 12% of the total length of 290 kilometres of road is paved and in some sectors, people have to walk more than half an hour to reach the (unpaved) road network. The DDP says that the poor quality and lack of infrastructure is a major concern for the district, also considering that during rainy season most dirt roads become impassable. Only 10% of the households have access to electricity and for cooking, people use wood and charcoal. Informal housing is an issue in the district, where households are dispersed over the many hills, resulting in 45% of households being situated in unplanned areas.

More than 25% of the population is living under the poverty line and even 11.9% is living in extreme poverty (DDP Nyabihu, 2013). The whole district counts only five markets that are dispersed over four sectors. This means that two-thirds of the sectors do not have a marketplace, which shows the nature of subsistence agriculture of this district. According to the DDP (2013), 42.1% of the people in Nyabihu are using a mobile phone and only 15% of the population has heard of the internet. Considering the ICT-sector, it is acknowledged that the district still has to overcome a major challenge in order to reap benefits from these informational and communicational developments.


Map 2: Nyabihu, source: National Institute of Statistics of Rwanda, 2010

Nyabihu is thus a region where many people struggle to develop their livelihoods and because arable land is distributed among children through an inheritance system, many farmers only have a small plot of land which provides barely enough food for their own household. The hilly terrain is another important aspect in Nyabihu, as this causes infrastructural limitations that are probably affecting peoples' mobility. As less than half of the people is using a mobile phone, it is interesting to see how fast this communicational technology is developing among the population and which effects it has on the livelihoods of these people that are more or less designated to farming on a small plot of land.

### 4.2.2 Bugesera

The other research area is the district of Bugesera in the Eastern Province, which is composed of 15 sectors, 72 cells and 581 villages. The first residents arrived around 1950, when the area was still inhabited by wild animals and large parts were still wetlands. Droughts started to dry up large parts of the area and the wildlife was killed or pushed towards the area of Akagera, which is now an official national park to the east of Bugesera. In the meanwhile people settled in Bugesera and nowadays this district is one of the few regions in crowded Rwanda where unused or natural land is designated to be civilised by Rwandans who can afford to buy a plot of land to start cultivating and make their own living. Compared with Nyabihu this is a major difference, as families in Nyabihu have been living there for ages. The rural areas in Bugesera are planned and more regulated; the image of randomly scattered houses in Nyabihu is replaced by an image of controlled land issue where houses are built uniformly.


Map 3: Bugesera, source: National Institute of Statistics of Rwanda, 2010

The district has an estimated total of 363,000 people that live on a surface of 1,337 km², which sets the population density at 271 inhabitants per square kilometre, significantly lower than in Nyabihu. The landscape can be typified as a sequence of low-plateaus with dry valleys and undulating hills (DDP Bugesera, 2013). Around 78% of the work force is dependent on subsistence agriculture, which

for this district, is a mixed system of cultivating and livestock rearing. Almost 75% of the people that are active in agriculture have less than 1 ha of arable land (DDP Bugesera, 2013). Almost half of the population lives below poverty line, and even 28.3% live in extreme poverty (DDP Bugesera, 2013). Over the last years, different government policies to support the poor have led to the provision of housing, construction of infrastructure, educational support and 29% of the households in Bugesera got cattle through the 'one cow per family program'. The district has seven modern market places and concerning other economic sectors, the DDP (2013) states that trade is currently developing as a result of booming economic activities in Burundi, which borders Bugesera in the south. Furthermore, the DDP sees potential for industrialisation in the district considering the relatively flat landscape, the construction of a regional airport (expected to be completed by 2017), the construction of a railway line (project to start in 2018) and the creation of an industrial zone. The majority of the population lives in the rural areas, as only 7% live in the town of Nyamata or in the four other centres that are designated as urban areas. In Bugesera, 12.3% of the households have access to electricity and for cooking 96.3% of the people use wood. Concerning ICT, the DDP (2013) says that 50% of the population owns a mobile phone and that 95% of the population has never used a computer. The district has set an objective that in five years' time, 85% of the population should use a mobile phone.

### 4.3 Research methods

As we have seen in section 3.2, livelihood research has developed into a studies that considers poor people as being actively involved in their struggle against poverty, instead of being passive victims. In short, instead of only looking at 'what' poverty was, livelihood studies wanted to know 'why' there was poverty and 'how' it worked. Getting a deeper insight in the how and why of poverty meant that different methods of research had to be combined. Murray (2001) wrote about this, "that combinations of different methods of research are likely to appropriate for the effective conduct of livelihoods research" (p. 14). The concept of Q-squared research is therefore used in this research, where a qualitative method is used to help explain and give deeper insight into the quantitative method. According to Hulme (2007), a combination of both methods can give more quality to the data, a deeper understanding of that data and it can lead to more effective policies for development or poverty reduction.

During the fieldwork in Nyabihu and Bugesera, both quantitative and qualitative research is conducted. The quantitative side gathers information about the household itself and the mobile phone use in general by carrying out a household questionnaire (Appendix 1A). For instance, information about composition of the household, relation to the head of the household, gender, age, educational level, frequency of using the mobile phone, purpose of using the mobile phone and amount of airtime spent on weekly basis, are aspects that are collected to get a good overview of the household and the presence of the mobile phone in it. The next step is to collect data about the actual use and impact of the mobile phone on that household. For this, more qualitative data, the second part of the questionnaire (Appendix 1B) focuses on the everyday connectivity and mobility of one member of the household. This part of the questionnaire is not entirely structured, as it is possible for the interviewer to ask additional questions when interesting aspects are mentioned by the respondent. Furthermore, a degree of flexibility is encouraged in the form and/or order of questions, if it is likely that this will reveal more in-depth information about the experiences of the respondent. For instance, when a participant does not understand the question, it can be explained by asking additional questions or giving examples. The intention is to get more detailed information

about the experiences of that person with the mobile phone and its multiple effects on connectivity and mobility. Questions are asked about the quantity and frequency of contact, about the intention of these contacts, about frequency and intention of travels and their experience with the impact of the mobile phone on all this. As stated before, this research will also focus on the households that do not have a mobile phone, but they cannot be asked those questions. An alternative section of questions is therefore added in the interview that focuses on connectivity and mobility of these households and asks how they feel about not having a mobile phone. The last section of the questionnaire asks the participant if he or she has anything else to mention about the mobile phone in relation to livelihood development. Before taking part, each participant will have to sign the informed consent form (Appendix 2) in order to make sure every respondent takes part on voluntary basis.

The quantitative method may give some results that show us what the current situation is in rural Rwanda concerning socio-economic aspects of households and the presence of the mobile phone in them. It will, for instance, be important to see if presence of the mobile phone has anything to do with the level of education of the household and if profession has anything to do with, let us say, the frequency of using a mobile phone. The qualitative method will then give explanatory data on the actual impact of the mobile phone on someone's network and movements or travels. In the end, the combination of these methods will give a good insight in how the mobile phone is impacting the livelihood of someone in rural Rwanda.

**4.4 Fieldwork strategy**

The aim of the survey research is to include a high variety of households and therefore I tried to visit as much rural households as possible. Out of the members of the household that are present during the questionnaire, one individual is selected and asked to take part in the qualitative part of the questionnaire. The reason for sampling in this direct way is the relative ease and speed it will give to the process of data collection. Considering the lack of access to and low degree of availability of local demographic data, I decided to use this strategy, which cannot be solely described as random. However, to reach a certain level of randomness in the sample, I wanted to get a well distributed number of participants from each cell. Therefore, a different village was visited every field day and it was decided that when we were done with one household, we would not go to near neighbours, but would continue the fieldwork with a more distant household.

Because most people in rural Rwanda only speak their Rwandan language, Kinyarwanda, I had to find translators to bridge this gap in communication and help me with the organisation of the fieldwork. Therefore, I worked together with three Rwandan bachelor students from the College of Agriculture, Animal Science and Veterinary Medicine in Kigali, who could speak Kinyarwanda and English fluently. We created a mutual benefit and interest by agreeing that they could use data for their own bachelor theses. This resulted in a highly productive and cooperative working environment that has certainly contributed to the validity of the collected data. Every fieldtrip I was accompanied by one student, and as they became the actual interviewer, some training was needed for them to do the questionnaire in the way that I wanted it to be done, because the language barrier prevented direct voice communication between myself and the respondent. In this, the quality of the collected data is dependent on the authenticity of the translation by my research assistants, upon which I fully trust. Another point here is how the information was written down, as sometimes it happened that a question was posed and quite a lengthy answer was given, while only a short answer was written

down. I then had to convince the research assistant to write down as much as possible as this could be very useful qualitative information.

During the actual fieldwork, some problematic issues were experienced with the strategy and actions were undertaken to avoid them from disrupting the fieldwork. First of all, the fieldwork was conducted during weekdays and daytime, from the early morning until late afternoon, which meant that most people were at work or busy with daily activities and thus unavailable to participate in this research. In quite some households, only the wife and younger children were present, while the husband was at work and the older kids were at school. Therefore, we decided to do fieldwork on Saturdays also, when we could expect entire households to be present, which would ultimately lead to a more comprehensive data collection. Likewise, this was the case with the weekly public markets that took place in some sectors. If a public market was being held on a Tuesday in a particular sector, we knew that doing fieldwork on that day in that sector was not going to be successful, and thus we would choose another sector. A second point here is that we had to be very clear about our objective and intentions to make sure that people were not getting false expectations. As the research is about the mobile phone, people can come to expect to get some material benefit related to the mobile phone if they participate. This could influence their response and thus the validity of the research, as they may think to benefit more when so-called 'desired' answers are given.

**4.5 Limitations and validity**

During the first days of fieldwork, it became obvious that certain elements of the questionnaire had to be changed, simplified or removed in order to be better understood by the participants and make the survey more fluent. Furthermore, considering that most people we were interviewing are peasants, another section of questions was added to the second part of the questionnaire that dealt with specific agricultural aspects and the role of the mobile phone in it. The final questionnaire is attached as Appendix 1 and the informed consent form as Appendix 2.

In total, 112 different households participated in this research and this covers 554 individuals. In most cases, either the head of the household or his/her spouse was home and willing to answer the questionnaire. He or she thus gave information about the other household members. For subjects as age and birthplace there is not a big risk of unreliable data as I expect the respondent to know this about his household members. For information about the use of the mobile phone however, I have to fully trust on the respondent's knowledge about, for instance, who actually has a mobile phone in the household and for what purposes they are using it. One of the more controversial subjects here would be the question about how much airtime a mobile phone owner uses each week, as it can be possible that, for example, a 25-year old member of the household who is a son of the households' head is holding back information about his mobile phone expenditures because otherwise he will have to invest that money into the households' livelihood. However, this can also be attributed to the trend of individualisation of households (see Section 3.2). Altogether, we must keep in mind that the collected data of 554 individuals comes from 112 respondents.

Out of the fieldwork experience some further limitations came forward that may have an influence on the validity of the collected data. Rwanda has quite a layered bureaucracy, which meant that we had to get permission at different local levels before we could start with the actual fieldwork. At both the district and sector offices we had to explain what the research was about and how we would conduct the fieldwork. At the first sector office, one of the local guards was appointed by the sector

officer to accompany us in the field. At first, this seemed to be very useful as this person could show us where villages were situated and what the best way to get there was. However, it did not give us a feeling of freedom and the presence of the guard probably created an undesired expectation or effect on the people we interviewed. We agreed with the sector officer that is was better to walk around on our own and agreed the same with the other sector officers we encountered later on. Together with the decision to not interview direct or near neighbours, an as random as possible selection of households was ensured. In addition, for each day of fieldwork, a different cell was visited. This made sure that we would speak to entirely different people and households with different backgrounds, but it also entailed that we visited a different, rather unfamiliar area every day. Especially going up to the more remote villages turned out to be quite a challenge considering the main part of the fieldwork was conducted during rainy season.

### 4.6 Research sample

In order to get a good image of the total sample, I will give a general overview in this section. We will have a closer look at gender, age, education and profession. The gender distribution can be seen in Table 4.1 and shows that there are more women than men in the sample. This is in line with the Statistical Yearbook of Rwanda 2013, in which the Fourth Population and Housing Census (RPHC4) is outlined. It shows that women represent 51.8% of the total population of Rwanda and an explanation for this is that life expectancy is lower for men, 62.4 years old, than for women, 66.2 years old (RPHC4 2013).

| | | Frequency | Percent |
|---|---|---|---|
| Valid | male | 260 | 46,9 |
| | female | 294 | 53,1 |
| | Total | 554 | 100,0 |

Table 4.1: Gender

The average age of the total sample is 23.3 years old, with the youngest being just one month and the oldest 87 years old (see Table 4.2).

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 554 | ,1 | 87,0 | 23,301 | 18,4310 |
| Valid N (listwise) | 554 | | | | |

Table 4.2: Age

4.6.1 Age structure and gender

The age structure of the total sample can be seen in the figure below (Figure 4.1), which shows the age structure in categories of five years each. If we would compare this with the age structures of developing countries, we can see a similar pyramid construction, where childred in the age up to 15 years old are in general overrepresented. For the sample however, we see that the age-group of 6-10 year-olds is larger than the 0-5 year-olds. This could be coincidence, but an explanation for this could be the decrease of infant mortality and increase of life expectancy in the last decade, which means that now fewer children die in their first five years of life, while overall, people live longer. Consequently, women are getting less children as the ones they are getting have a higher chance of survival. The group of children in the age of 0-5 thus becomes smaller at the expense of the older age groups. The RPHC4 shows that in 2002 the overall life expectancy was 53.8 years, while this increased to 64.4 years in 2012. Statistics on child mortality show that in 2002 an average of 139 out of 1,000 infants died, while in 2012, this had decreased to 49 out of 1,000 infants.

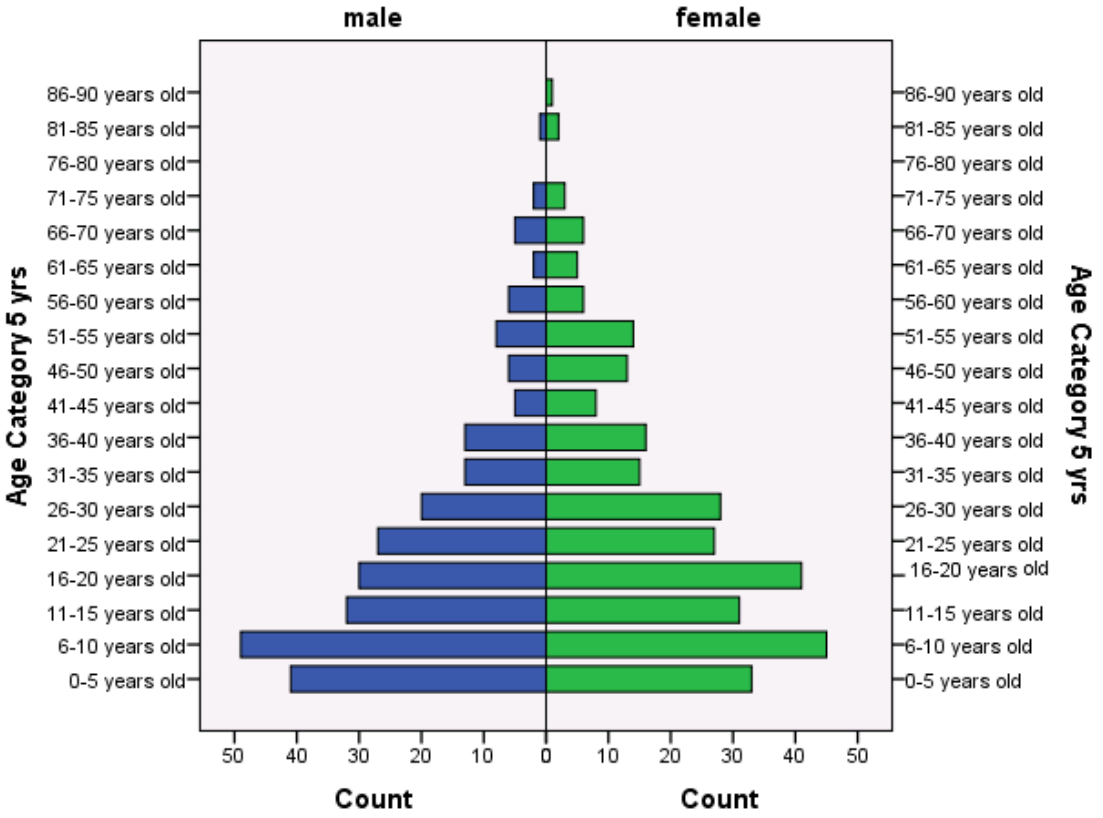


Figure 4.1: Age structure and gender of total sample (554 individuals)

### 4.6.2 Education

The educational system in Rwanda consists of pre-primary or nursery school (aged 3-6), primary school (7-12), lower secondary school (13-15) and upper secondary school (16-18). After this, students can attend university for a Bachelors' degree (duration of 4 years) and subsequently for a Masters' degree (duration depending on type of study). In the table below (Table 4.3), the highest level of education of each individual is shown in relation to their age. The age category corresponds with the age categories that are used in the educational system in Rwanda.

| | | Age in educational category | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-2 | 3-6 | 7-12 | 13-15 | 16-18 | 18+ | |
| Highestlevelofeducation | no education | 41 | 36 | 8 | 0 | 4 | 73 | 162 |
| | nursery | 0 | 6 | 0 | 0 | 0 | 0 | 6 |
| | primary school 1 | 0 | 7 | 35 | 1 | 1 | 4 | 48 |
| | primary school 2 | 0 | 2 | 29 | 1 | 0 | 10 | 42 |
| | primary school 3 | 0 | 0 | 21 | 5 | 7 | 16 | 49 |
| | primary school 4 | 0 | 0 | 7 | 6 | 3 | 23 | 39 |
| | primary school 5 | 0 | 0 | 4 | 7 | 6 | 22 | 39 |
| | primary school 6 | 0 | 0 | 2 | 7 | 10 | 52 | 71 |
| | secondary school 1 | 0 | 0 | 1 | 2 | 3 | 3 | 9 |
| | secondary school 2 | 0 | 0 | 0 | 3 | 6 | 11 | 20 |
| | secondary school 3 | 0 | 0 | 0 | 0 | 6 | 12 | 18 |
| | secondary school 4 | 0 | 0 | 0 | 0 | 3 | 3 | 6 |
| | secondary school 5 | 0 | 0 | 0 | 0 | 1 | 7 | 8 |
| | secondary school 6 | 0 | 0 | 0 | 0 | 0 | 27 | 27 |
| | bachelor 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| | bachelor 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| | bachelor diploma | 0 | 0 | 0 | 0 | 0 | 7 | 7 |
| Total | | 41 | 51 | 107 | 32 | 50 | 273 | 554 |

**Table 4.3: Educational level in age categories**

The table above shows that out of the 51 children in the age of 3-6 years, 15 are already engaged in education, with 6 at nursery school, 7 at primary school grade 1 and even 2 at primary school grade 2. Looking at how many people in the age categories of 16-18 and 18+ have finished primary school, we see that out of the 323 people, only 154 have finished primary education, with 92 people quitting while at primary school. A total of 77 people have not had any education at all. Only 37 people out of the sample have finished secondary school, but it is possible that a number of people out of this group, who are between 18th and early 20s, are still finishing secondary school. Furthermore, only 10 out of 273 adults (3.6%) have been able to carry on studying at university.

### 4.6.3 Profession

The low educational level of the sample is not a surprise, considering the sample is collected in rural Rwanda. The next table (Table 4.4) shows the age in educational category and the professional sectors that people are active in. Normally, the laborforce of a country includes every person from the age of 18 years and older, up to a certain age when retirement steps in. For a developing country however, this retirement age is highly dependent on someone's physical and financial condition. If someone is 65 years of age, physically sound but financially struggling, he or she will probably still have to work in order to survive. If someone is at the age of 60, and struggling both physically and financially, he or she will probably be retired as the children will try to take care of their parent(s). It is thus difficult to say from and until what age someone is expected to work. In statistics from the Rwanda Labour Market Information System website (www.lmis.gov.rw), the productive age is specified as 15-64. In Table 4.4, we can see that two younger children (age categories of 7-12, 13-15) are already working. For the category 'unknown' it can be expected that these children are already helping out on the land or in the household with all sorts of chores, like fetching water and taking care of their younger siblings. The children in the age categories 0-2 and 3-6 who are in the category 'unknown' are just not yet old enough to go to school, while the 38 children in the age of 7-12 are probably not going to school, because then they would have been labelled as 'students'.

If we consider the age category of 15+ as the labor force of the sample, we see that 197 people are active in agriculture, which amounts to 61%. In terms of households, there are 101 households active in agriculture and 14 of those households do not have their own land. The rest of the people is reasonably divided among the other sectors, with, for instance; a local guard, a policeman and a soldier in 'security', a barber, butcher, baker and bicycle repairer among 'craft' and a media producer and two motor taxi drivers among 'services'.

| | | Age in educational category | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-2 | 3-6 | 7-12 | 13-15 | 16-18 | 18+ | |
| professional sectors | agriculture | 0 | 0 | 1 | 1 | 7 | 190 | 199 |
| | craft | 0 | 0 | 0 | 0 | 0 | 11 | 11 |
| | education | 0 | 0 | 0 | 0 | 0 | 10 | 10 |
| | government | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| | housekeeping | 0 | 0 | 0 | 0 | 3 | 2 | 5 |
| | in prison | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| | retired | 0 | 0 | 0 | 0 | 0 | 6 | 6 |
| | security | 0 | 0 | 0 | 0 | 0 | 3 | 3 |
| | services | 0 | 0 | 0 | 0 | 2 | 5 | 7 |
| | student | 0 | 9 | 68 | 23 | 18 | 16 | 134 |
| | trade | 0 | 0 | 0 | 0 | 0 | 10 | 10 |
| | unemployed | 0 | 0 | 0 | 1 | 8 | 10 | 19 |
| | unknown | 41 | 42 | 38 | 7 | 12 | 8 | 148 |
| Total | | 41 | 51 | 107 | 32 | 50 | 273 | 554 |

**Table 4.4: Profession in age categories**

### 4.6.4 Household characteristics

Next to looking at individual numbers, it is also interesting to see how the households are comprised. First we will take a look at the head of the households, who were indicated by the respondent. In the following figure (Figure 4.2), we can see that 42 of the 112 households are headed by a female and that one of those households is without children. The 41 female-headed households with children are all single-parent households. Of the 70 male-headed households, three are without children and two are single-parent households. This brings the total of single-parent households to 43 households, or 38%. An explanation for this can be found in the genocide in 1994 and the lower life expectancy of men compared to women.

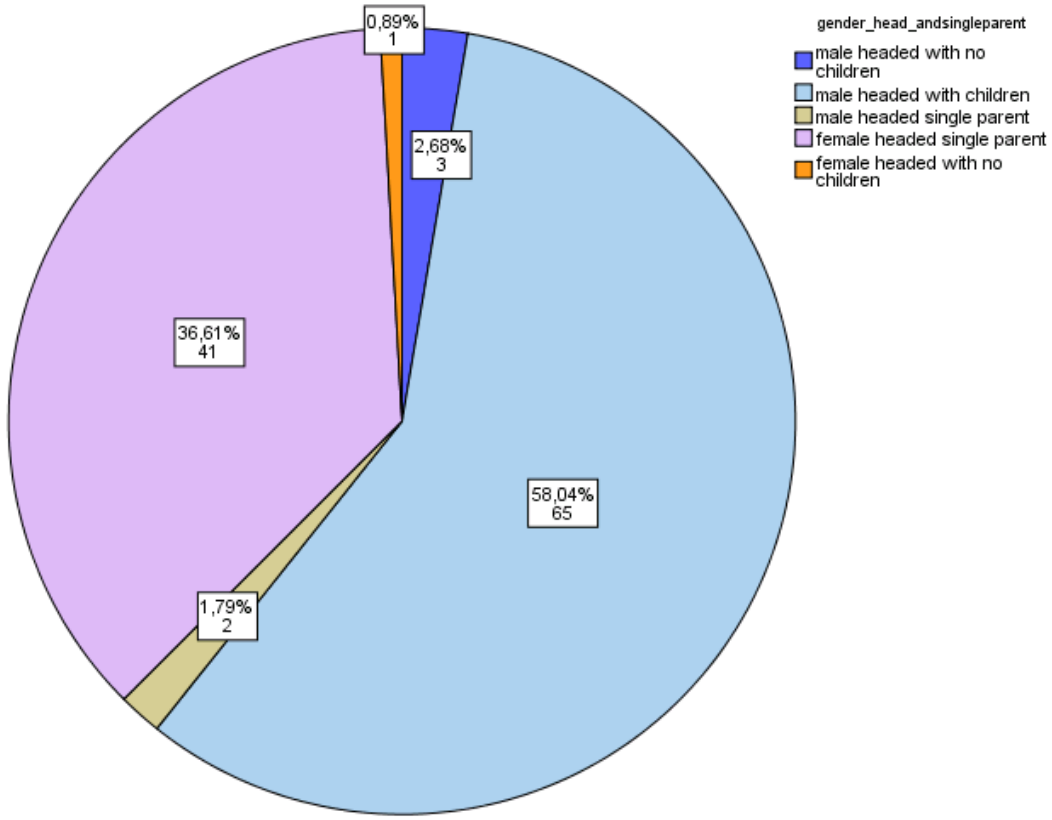


Figure 4.2: Male- or female-headed and single-parent households

The majority of the heads of the households is between the age of 25 and 55 and the youngest head of a household is 24 years old. There are some rather old household heads, but with those 15 that are already past their 65s, we see that economically they are not the breadwinner of the household anymore, but they are still seen as the head of the household by the other members. These households are financially run by older children who still live in the parental house and are taking care of their parents who are enjoying their retirement. With some of these households, that consisted out of one or two elderly, a younger child and one or more grandchildren, we saw that they were financially supported by older children that had already moved out of the parental house. The exact composition of a household in rural Rwanda was sometimes hard to give, as it can be argued that the children who have already moved out of the house, but are still supporting the household financially, should be included in that household. So we asked respondents to include everyone in the household who was still living there, even if that was just for one month a year, and

those who where still supporting the household while they were not living there anymore. In this way, we tried to get a complete overview of each household. However, many households that were still supported financially indicated that this support was not structural, but only for when they were really struggling. Someone who has already moved out of his parental house, and is only supporting that household occasionally, was thus not considered a member of the household anymore by the respondent.

In Table 4.5 we can see that three head of households are usually absent, which means that they are present at their household only for a couple of months a year, as the rest of the year, they are working and living in Kigali or another part of Rwanda. With the four head of households that are usually resident, we see a similar situation, whereas they are home at least every once a month.

| | | Relationtohea dofhousehold: head of household | Total |
|---|---|---|---|
| Resident | resident | 105 | 105 |
| | usually resident | 4 | 4 |
| | usually absent | 3 | 3 |
| Total | | 112 | 112 |

Table 4.5: Head of household and residential status

The largest households we encountered had nine members. There were only two one-person-households and the average number of people in one household was 4.9, which is a bit higher than the 4.4 as indicated by the RPHC4 (2013). As regards to educational level, we see 41 head of households without education and 43 finished primary school (Table 4.6). Only three head of households obtained a bachelor's degree and they are now all working as teachers. In Table 4.7 we see how much heads are active in each professional sector. Out of the 85 heads that are engaged in agriculture, 34 had no education at all, and 28 finished primary school with even one person finishing secondary school. This shows a typical rural tradition; children just grow up as farmers as there are only few to none opportunities to study and become something else.

| | | Relationtohea dofhousehold: head of household | Total |
|---|---|---|---|
| Highestlevelofeducation | no education | 41 | 41 |
| | primary school 1 | 2 | 2 |
| | primary school 2 | 6 | 6 |
| | primary school 3 | 4 | 4 |
| | primary school 4 | 7 | 7 |
| | primary school 5 | 9 | 9 |
| | primary school 6 | 22 | 22 |
| | secondary school 1 | 2 | 2 |
| | secondary school 2 | 5 | 5 |
| | secondary school 3 | 5 | 5 |
| | secondary school 4 | 1 | 1 |
| | secondary school 6 | 4 | 4 |
| | bachelor 3 | 1 | 1 |
| | bachelor diploma | 3 | 3 |
| Total | | 112 | 112 |

Table 4.6: head of household and education

| | | Relationtohea dofhousehold: head of household |
|---|---|---|
| professional sectors | agricult | 85 |
| | craft | 6 |
| | trade | 6 |
| | educatio | 3 |
| | retired | 3 |
| | services | 4 |
| | unemploy | 3 |
| | security | 1 |
| | unknown | 1 |
| Total | | 112 |

Table 4.7: head of household and profession

Below, Table 4.8 shows that out of the 85 head of households that are engaged in agriculture, there are 12 (14%) households that do not have their own plot of land. They are working on the land of other people or are renting a plot of land to cultivate on. These people, together with the ones who are unemployed, can be considered as the poorest ones out of the sample. They are really dependent on other people which makes it really hard for them to become actively involved in their struggle against poverty.

| | | Owning Land | | |
|---|---|---|---|---|
| | | No | Yes | Total |
| Relationtoheadofhousehold | head of household | 12 | 73 | 85 |
| Total | | 12 | 73 | 85 |

**Table 4.8: Agricultural households and owning of land**

### 4.6.5 Conclusion

Rural Rwanda has a young population with a low educational level and most people are active in agriculture. Less than 20% is able to continue their education after primary school and only a few people are studying at university. By going into the houses of people during the fieldwork, I got an impression of the household's situation. If there was an electrical connection you could tell that this household was one of the better off. A couple of these households even had a television, but for many other households, the situation was worse. They did not have an electrical connection or a fixed water supply, their living room was also the bedroom for the whole household and some people even had to cook outside. Most of the time you could tell which situation the household was in by looking at their housing conditions and in combination with the information we got out of the conversations with those people, I would say that at least 30% of the households were struggling against poverty. Furthermore, signs of a transformation from an agricultural based economy to a knowledge based one, as envisioned by the government in their Vision 2020 policy, were not visible among my sample. Rural Rwanda is still highly dependent on agricultural activities and many livelihoods seem to be having a hard time to develop further, while others are still struggling against poverty. But how is the mobile phone impacting those livelihoods?

# 5. The mobile phone and connectivity

Going around in rural Rwanda is quite something for a *muzungu*[1]*;* people are staring curiously and kids will run after you. Sometimes people ask for help or a favour, or just want to have a little chat with you; "*where are you from? And what are you doing here?".* When you greet a group of people on the streets in Kinyarwanda, there are a lot of happy responses and laughter. There seems to be a lot of respect and kindness among the Rwandan people and travelling by public transport was a different experience every day. But there was also something else which caught my eye; a lot of people were holding their mobile phone in their hand continuously. Off course this is also the case in the western world, but in Rwanda people were holding their mobile phone like it was the most valuable object they possessed. During the field work, people said that the mobile phone was such an amazing asset because it had made it really easy to connect people with each other; the connectivity of the mobile phone *"basically opened up a new world"* (household 2.5).

This chapter tries to give an answer on the first subquestion; *what is the impact of the mobile phone on the connectivity of a rural households' livelihood in Rwanda?* In order to get a good understanding of the connectivity I will first look at who has a mobile phone and how they are using it. Subsequently, I will investigate how the social and economic connectivity of these people is impacted by the mobile phone by combining the quantitative data with the qualitative data. The following section of this chapter contains the changing connectivity of people that do not have a mobile phone. The concluding paragraph will give an answer on the first sub-question, based upon the research findings from Rwanda.

**5.1 Who is connected?**

Out of the 554 household members, 154 have a mobile phone and a further 15 are without one now, but had one before. In this section I try to analyse if someone's social-economic status influences the fact that someone has a mobile phone. The focus is on age, gender, education and profession because these are important differentiating factors for the use of the mobile phone. Furthermore, it is important to know how the mobile phone is distributed among the households.

5.1.1 Age

When we take a closer look at age and mobile phones in Table 5.1, we see that of the 247 children (age between 0 and 16) no one had a mobile phone. This group comprises of almost 45% of the total sample and its quite logical as especially younger children are highly unlikely to own a mobile phone, because they are just too young. The youngest mobile phone owner from the sample was 17 years old, but from conversations during the fieldwork it became clear that there are younger children in Rwanda who have a mobile phone. People told us that there are children in boarding schools, from the age of 14 or 15, who have a mobile phone in order to keep in touch with their parents. But we did not encounter them during the fieldwork. Another group that stands out is the elderly (60+), where only 22% has a mobile phone. On the question, what is the reason for this household member not having a mobile phone, this group answered in the direction of "*I can't read and write, so I would not be able to use it", "I don't think I will know how to use it, as it is difficult for older people to use"* and *"(one of) my child(ren) already has/have one, so I don't need it anymore"*.

[1] 'Muzungu' or 'Mzungu' is how local people in East Africa refer to a stranger or white person.

| | | OwnsaMP | | | | |
|---|---|---|---|---|---|---|
| | | mobile phone | smartphone | no | no, but had one before | Total |
| Age groups | children (0-16) | 0 | 0 | 247 | 0 | 247 |
| | young adults (17-25) | 50 | 2 | 50 | 7 | 109 |
| | adults (26-40) | 66 | 1 | 31 | 7 | 105 |
| | older adults (41-60) | 29 | 0 | 36 | 1 | 66 |
| | elderly (60+) | 6 | 0 | 21 | 0 | 27 |
| Total | | 151 | 3 | 385 | 15 | 554 |

Table 5.1: Owning mobile phone and age groups

Out of the people that can be expected to have a mobile phone (16+), we see that 154 out of 307 people have a mobile phone or smart phone, which is more than 50%. Furthermore, for 15 individuals it was indicated that they had a mobile phone before, but do not have one anymore (was stolen, broken or they had lost or sold it). The number of mobile phones seems to be lower than we could expect out of data from the World Bank, which showed that 57 out of every 100 people in Rwanda have a mobile cellular subscription (see Section 2.5). When we take a look at statistics on mobile phone ownership from both Nyabihu (42.1%, DDP Nyabihu 2013) and Bugesera (50%, DDP Bugesera), we see that mobile phone ownership in these rural areas is lower than national figures suggest.

### 5.1.2 Gender

When we take a look at the group of people that have a mobile phone or smart phone, we see that there are more men with a mobile phone than women (see Figure 5.1), while the overall sample counted more women than men. This indicates that it is easier for a man to get a mobile phone than for a woman, which is highly likely related with the status in the household. When a household is able to buy a mobile phone, the head is most likely to 'own' it. And as we have seen, most households are headed by a male. The traditional gender-relation, where the man is expected to deal with economic or productive aspects and the woman has to take care of the household, also comes up here as this was very much present in the rural villages we visited for field work.

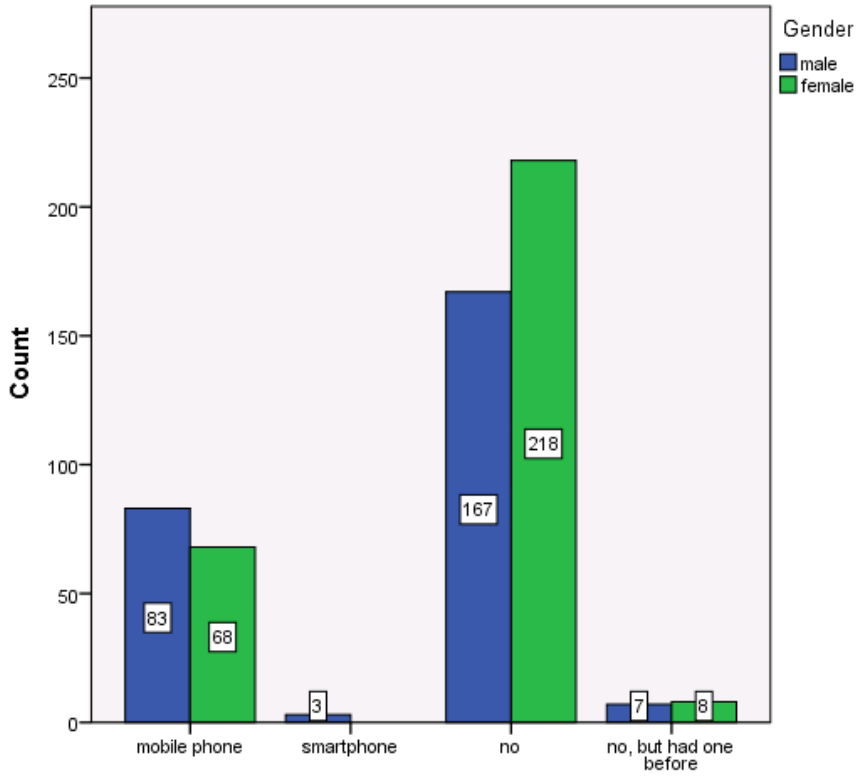


Figure 5.1: Owning mobile phone and gender

### 5.1.3 Education

Looking at the educational level of the group of people that can be expected to have a mobile phone, we see that out of the 154 people with a mobile phone, 20 did not have education at all, while 35 did not finish primary school. Out of the 144 people that finished primary school, 99 have a mobile phone, which is almost 70%. Out of the 37 people that finished secondary school, 86% have a mobile phone. The level of education is thus related with having a mobile phone or not, as a higher level of education makes it more likely that you have a mobile phone (Table 5.2).

| | | Owns a mobile phone | | |
|---|---|---|---|---|
| | | no | yes | Total |
| Education | no education | 56 | 20 | 76 |
| | primary 1 | 1 | 3 | 4 |
| | primary 2 | 9 | 1 | 10 |
| | primary 3 | 15 | 6 | 21 |
| | primary 4 | 12 | 13 | 25 |
| | primary 5 | 15 | 12 | 27 |
| | primary 6 | 19 | 37 | 56 |
| | secondary 1 | 3 | 3 | 6 |
| | secondary 2 | 8 | 8 | 16 |
| | secondary 3 | 6 | 10 | 16 |
| | secondary 4 | 2 | 3 | 5 |
| | secondary 5 | 2 | 6 | 8 |
| | secondary 6 | 5 | 22 | 27 |
| | bachelor 2 | 0 | 2 | 2 |
| | bachelor 3 | 0 | 1 | 1 |
| | bachelor diploma | 0 | 7 | 7 |
| Total | | 153 | 154 | 307 |

Table 5.2: Owning mobile phone and educational level

| | | Owns a mobile phone | | |
|---|---|---|---|---|
| | | no | yes | Total |
| prof sectors | agricult | 108 | 89 | 197 |
| | craft | 3 | 8 | 11 |
| | educatio | 0 | 10 | 10 |
| | governme | 0 | 1 | 1 |
| | housekee | 4 | 0 | 4 |
| | in priso | 1 | 0 | 1 |
| | retired | 6 | 0 | 6 |
| | security | 0 | 3 | 3 |
| | services | 2 | 5 | 7 |
| | student | 9 | 17 | 26 |
| | trade | 0 | 10 | 10 |
| | unemploy | 10 | 4 | 14 |
| | unknown | 10 | 7 | 17 |
| Total | | 153 | 154 | 307 |

Table 5.3: Owning mobile phone and profession

### 5.1.4 Profession

In Table 5.3, we can see if there is also a relation between profession and having a mobile phone or not. The people who are active in education, trade, security and government all have a mobile phone. For people in trade, it seems that the mobile phone is an essential tool. One of them told us the mobile phone is vital for doing her business, as she cannot 'dream or imagine or just guess' what her customers need (household 18.1). Therefore she has to have contact with her customers to know what she has to buy for them. Another trader told us that his business of trading goods and crops really took off once he had a mobile phone (household 7.4). Of the 14 people that are unemployed, four still have a mobile phone and within the group of students, 17 people (65%) have a mobile phone.

In Table 5.3, we can see that out of 197 people that are active in agriculture, 89 (45%) have a mobile phone. There was quite some difference in terms of the financial situation between some peasants, as some did not have their own land and were struggling to lent some plots or work for other people, while a couple of others had several plots and were hiring people to work on them. Out of the 85 households that have a household head who is active in agriculture, 12 do not own land. Of these households, 50% do not have a mobile phone, while the other half only has one mobile phone. Of the 73 agricultural households that own land, 17 (23%) do not have a mobile phone (see Table 5.4).

Considering that owning land tells a great deal about a households' financial situation, one thing becomes clear here; having a mobile phone is related with having enough money for it.

| | | Nr_of_mp_in_hh | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | ,00 | 1,00 | 2,00 | 3,00 | 4,00 | 5,00 | 6,00 | |
| Owning Land | No | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 12 |
| | Yes | 17 | 26 | 17 | 9 | 2 | 1 | 1 | 73 |
| Total | | 23 | 32 | 17 | 9 | 2 | 1 | 1 | 85 |

**Table 5.4: Owning land and number of mobile phones in the household**

Those without their own land and without a mobile phone are all extremely poor and respondents of these households told us that *"food and clothes are their first priority"* (household 5.8) and that they *"cannot save money to buy a mobile phone, as there is simply not enough money"* (household 6.2). Another respondent told us that *"the mobile phone is a multiple 'treasure', as people with a mobile phone do not face as many problems as those without one"* (household 11.4).

### 5.1.5 Distribution of mobile phones among households

For households that are active in agriculture without their own land, it is thus hard to buy a mobile phone, as they have more important things on their mind; survive. This brings us to the last analysis of this section, the distribution of the mobile phone among the households from the sample. Figure 5.2 shows that there were 27 households without a mobile phone at all, while there was even one household with six mobile phones. The number of people in a household influences this, as further analysis shows that of the 38 households with six or more members, only five households are without a mobile phone.

The mobile phone has thus already reached 75% of the households from the sample of this research, which is in line with statistics that say that about 60 out of 100 people in Rwanda have a mobile cellular subscription (see section 2.4). Of the 27 households without a mobile phone, 4 households had a mobile phone before, so they can also know what the impact of a mobile phone is. Together with the fact that the mobile phone is present in more than 75% of the households of the sample, this confirms that almost every Rwandan has rubbed shoulders with the effects of the mobile phone.

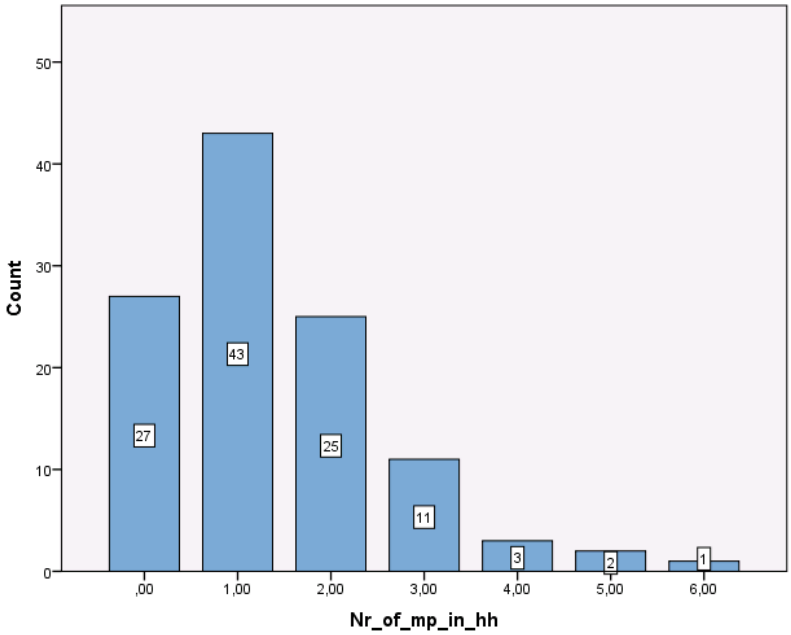


**Figure 5.2: Number of mobile phones in households**

For the people that do not have a mobile phone, this is supported by comments like *"I don't have a mobile phone because it is too expensive, but I do have a SIM-card which I put in my neighbours' phone in emergency situations"* (household 18.2) and the fact that they told us that they sometimes use the mobile phone of their neighbours (householdnumber 6.1, 7.6, 8.3, 10.2 and others).

### 5.2 Mobile phone use: frequency, purpose, airtime and charging

We have seen that many people in rural Rwanda have a mobile phone, but how are they actually using it? Are they 'connected' all the time; which can be expected from the fact that people were always holding their mobile phones in the minibuses, or maybe just a couple of times a day? And how are they then using it; only for calling or texting, or also for other purposes? Below, Table 5.5 shows the frequency of mobile phone use for the age groups that are split up according to gender.

| | | Age groups | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | young adults (17-25) | | adults (26-40) | | older adults (41-60) | | elderly (60+) | | **Total** | |
| | | Gender | | Gender | | Gender | | Gender | | **Gender** | |
| | | male | female | male | female | male | female | male | female | **male** | **female** |
| | | Count | Count | Count | Count | Count | Count | Count | Count | **Count** | **Count** |
| Frequency | unknown | 1 | 0 | 6 | 3 | 5 | 0 | 0 | 0 | **12** | **3** |
| | continuously | 12 | 2 | 18 | 10 | 5 | 0 | 0 | 0 | **35** | **12** |
| | once an hour | 2 | 3 | 3 | 5 | 3 | 1 | 0 | 0 | **8** | **9** |
| | couple times a day | 11 | 10 | 10 | 7 | 4 | 10 | 3 | 3 | **28** | **30** |
| | once a day | 1 | 4 | 1 | 3 | 0 | 1 | 0 | 0 | **2** | **8** |
| | couple times a week | 1 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | **1** | **6** |
| | **Total** | **28** | **24** | **38** | **29** | **17** | **12** | **3** | **3** | **86** | **68** |

Table 5.5: Frequency of mobile phone use with age groups and gender

From 15 out of the 154 individuals, the frequency of mobile phone use is unknown, as the respondent could not give this information from his fellow household member. Out of the 47 people who use their mobile phone continuously, 35 are male and almost 60% is in the age of 26-40. Of the 17 people that are only using the mobile phone once a day or less, only 1 is older than 40 and three are male. Of the six elderly with a mobile phone, respondents indicated that they only use their mobile phone a couple of times a day.

From the total of 68 women with a mobile phone, the largest proportion (30 women, 44%) is using the mobile phone a couple of times a day. With males however, we see that of the 86 men with a mobile phone, the largest proportion (35 men, 41%) is said to be using the mobile phone continuously, while 32% uses it a couple of times a day. This shows that there is a difference between how often men and women are using their mobile phone. An explanation for this can possibly be found in the traditional gender-relation between men and women. It is likely that the men have to use the mobile phone more in their role as 'leader' of the household, instead of the women who are taking care of the household. There are 42 households where this gender-relation does not play any role, as they are headed by a female. A total of 17 (40%) of these households have a mobile phone and if we look at the frequency of use, there are three (18%) women who use it once an hour and 12 (71%) who use it just a couple of times a day. So these women are not really using it more frequently now they are the 'leader' of the household.

But for which purpose are all these people using it? For this, we asked respondents to indicate for which purpose they and their household members with a mobile phone were using it. Table 5.6 gives an overview of this, where again a division is made between age groups and gender. We can see that 59 people, or 38% of the ones with a mobile phone, use their mobile phone solely for calling and texting. As indicated earlier, mobile banking is a well-known feature in Rwanda nowadays and it is becoming popular in the rural areas too, which is reflected in the sample, as 79 people (51%) are said to be using this. Furthermore, we see that in the group of people that is only using the mobile phone to call, 18 out of 27 people is female and in the group that uses the mobile phone for

| | | Age groups | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | young adults (17-25) | | adults (26-40) | | older adults (41-60) | | elderly (60+) | | **Total** | |
| | | Gender | | Gender | | Gender | | Gender | | **Gender** | |
| | | male | female | male | female | male | female | male | female | **male** | **female** |
| | | Count | Count | Count | Count | Count | Count | Count | Count | **Count** | **Count** |
| Purpose | unknown | 1 | 1 | 5 | 3 | 5 | 0 | 0 | 0 | **11** | **4** |
| | calling | 2 | 4 | 5 | 6 | 4 | 6 | 0 | 2 | **11** | **18** |
| | calling and texting | 8 | 5 | 5 | 5 | 4 | 2 | 1 | 0 | **18** | **12** |
| | calling and mobile banking | 3 | 2 | 4 | 4 | 0 | 2 | 2 | 1 | **9** | **9** |
| | calling, texting and internet | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **1** | **0** |
| | calling, texting and mobile banking | 7 | 12 | 13 | 9 | 4 | 2 | 0 | 0 | **24** | **23** |
| | calling, texting, internet and mobile banking | 7 | 0 | 5 | 2 | 0 | 0 | 0 | 0 | **12** | **2** |
| | **Total** | **28** | **24** | **38** | **29** | **17** | **12** | **3** | **3** | **86** | **68** |

**Table 5.6: Purpose of mobile phone use with age groups and gender**

calling, texting, internet and mobile banking we can see that out of 14 people there are only two women. This again indicates the difference between men and women concerning the use of the mobile phone.

For all people in the sample who have a mobile phone it was indicated they have a pre-paid account. Buying airtime is thus a precondition for calling or texting someone. People can buy airtime at many different locations and through mobile banking services it is also possible to send someone airtime. We asked people to indicate how much airtime they are using weekly, which is shown in Table 5.7, where also the frequency of use is shown.

| | | Frequency | | | | | |
|---|---|---|---|---|---|---|---|
| | | continuously | once an hour | couple times a day | once a day | couple times a week | Total |
| Airtime per week | 100 Rwf/week | 0 | 0 | 10 | 4 | 4 | 18 |
| | 200 Rwf/week | 0 | 3 | 9 | 3 | 2 | 17 |
| | 300 Rwf/week | 3 | 2 | 7 | 3 | 0 | 15 |
| | 400 Rwf/week | 5 | 1 | 2 | 0 | 0 | 8 |
| | 500 Rwf/week | 6 | 7 | 17 | 0 | 1 | 31 |
| | 600 - 1000 Rwf/week | 17 | 2 | 6 | 0 | 0 | 25 |
| | 1100 - 2000 Rwf/week | 7 | 2 | 5 | 0 | 0 | 14 |
| | 2100 - 5000 Rwf/week | 3 | 0 | 4 | 0 | 0 | 7 |
| | 5000+ Rwf/week | 2 | 0 | 1 | 0 | 0 | 3 |
| Total | | 43 | 17 | 61 | 10 | 7 | 138 |

**Table 5.7: Weekly airtime and frequency**

We can see that out of 138 people, 18 (13%) are only spending 100 Rwf (€ 0.11) a week on airtime and a total of 89 people (64%) spend a maximum of 500 Rwf (€ 0.58) on airtime every week. There are 25 people (18%) who spend between 600 and 1,000 Rwf a week, while another 14 people (10%) spend between 1,100 and 2,000 Rwf. For three people it is indicated that they spend more than 5,000 Rwf (€ 5.83), where one individual was said to be spending at least 10,000 Rwf on airtime each week. This individual was usually absent from his household (household 19.3) in Bugesera as he had a business in trading crops in Kigali, for which he obviously used his mobile phone a lot. The other two individuals who spend more than 5,000 Rwf are also active in trade. Out of the 138 individuals, 82 are active in agriculture and of the people who are spending only 100 Rwf a week, 13 are active in agriculture, while the highest proportion of farmers, 18 out of 82 (22%) is spending 500 Rwf per week on airtime. Of 10 farmers it was said they spend more than 1,000 Rwf a week on airtime.

Another aspect that is important for using a mobile phone is what people pay for charging their mobile phone. During the fieldwork, we encountered only a couple of houses that had electricity,

which is also reflected by the gathered data, which shows that 22 people out of 89 we were able to get information from, are charging their mobile phone at home. This is still 25%, but an important notion here is that when a household has an electricity connection, it is highly likely not a household that is struggling against poverty. Logically, this means that there are more mobile phones present in that household. Looking at the data from households, it shows that those 22 people come from 12 different households. Now we can say that only 12 out of 112 household from the sample have electricity, which is almost 11%. For rural Rwanda this will reasonably match reality, as the RPHC4 (2013) indicates that 18% of all households in Rwanda had electricity. But getting back to where people charge their mobile phone, we found 53 out of 89 people who charge their mobile phone at a battery shop and a further 14 who could charge it at a church, a relative's or friend's place, at school or at neighbours. Charging at a battery shop costs 100 Rwf each time and most people had to charge once or twice a week, depending on how intense they were using their mobile phone.

**5.3 Socially or economically connected?**

Now we know how often and for which purpose people are using their mobile phone, the next step is to analyse what people in rural Rwanda actually get out of using a mobile phone. Do they use it to keep in touch with relatives or friends that moved away or are they using it for economic development of their livelihoods; how does their daily network look like?

To get a better image of this, we take a closer look at the qualitative data we gathered of the experiences of the 112 individual respondents concerning connectivity. There are 62 respondents with a mobile phone and 50 without one and we take a closer look at their networks to see to what extent they are social or economic. Respondents with a mobile phone were first asked who their five most important daily face-to-face contacts were, after which they were asked who their five most important daily mobile phone contacts were (with whom they called and/or texted the most). Furthermore, we asked the respondents if they have met new people because of the mobile phone and to indicate if these new contacts are social or economic related. For respondents without a mobile phone, only the first question was applicable. Figure 5.3 shows the social related contacts, while figure 5.4 shows the economic related contacts. The number of social and economic contacts of the respondents with a mobile phone is shown in the green bar and the everyday contacts of people without a mobile phone are shown in the blue bar.

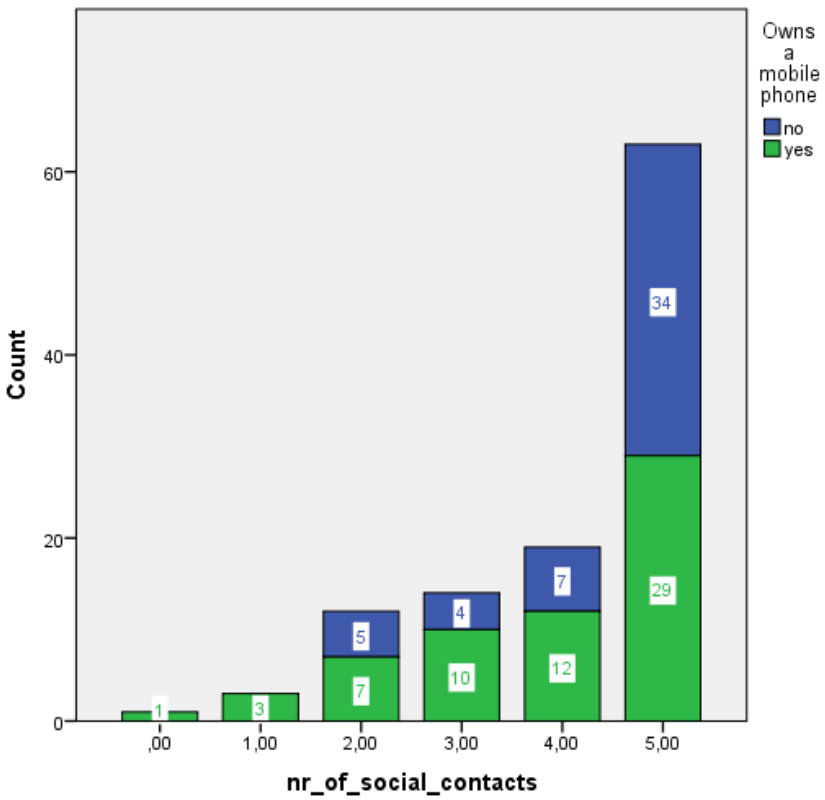


Figure 5.3: Social network

If we take a look at the number of social contacts, we see that there are three people with a mobile phone that indicated they only have one social contact, while there is even one person who said that he had none social contacts within his five most important daily contacts. Almost half of the respondents with a mobile phone indicated that there were only social contacts among their most important daily contacts. That increased connectivity is beneficial for social contacts is also reflected by a respondent (household 2.4) who told us that a couple of years ago, before he had a mobile phone, he used to be away from home for longer periods for his former job. He and his wife stayed in touch by sending each other letters. But when they both got a mobile phone, they were in direct contact with each other, which improved their relationship. The respondent told us that it made him feel better, because he could now know how she was doing by just calling her, instead of only hearing from her once every two weeks.

Among social contacts were mainly family members as brothers, sisters, in-laws and uncles, while a lot of people also indicated neighbours as their most important daily contacts. This shows the localities those people live in; their plots of land are usually around their house and as working on those plots is their primary activity, they have a lot of contact with neighbours. And it is not only about direct neighbours here, as people in rural Rwanda basically depend on their fellow villagers, which also brings a high degree of social control. This can also be found in comments from some respondents, who told us that when they are away from home, they keep in touch with their neighbours to ask if they can check if everything is still alright at their house. Some of the female respondents (households 3.1, 3.4, 4.2, 6.3, 9.1, 17.1, 17.4) told us that in this way, they felt more free to travel, as they could check upon their children via their neighbours while they were away.

If we take a look at the economic network, we see that there are 35 out of 62 people who indicated that there are no economic contacts among their most important daily mobile phone contacts. For 10 respondents there is one economic contact and for three people, there are an estimated 10 economic contacts. Among these three were two traders and one mobile phone repairer, who all indicated that they were using their mobile phone almost solely for economic purposes. Of the other 14 respondents with at least two economic contacts, it can be said that the mobile phone is providing them with economic benefits. The respondents with one or two economic contacts indicated that these contacts were their boss or, in the case of traders, important suppliers of goods. Quite some respondents indicated that their economic contacts were actually also friends, which shows that it is difficult to divide social and economic contacts.

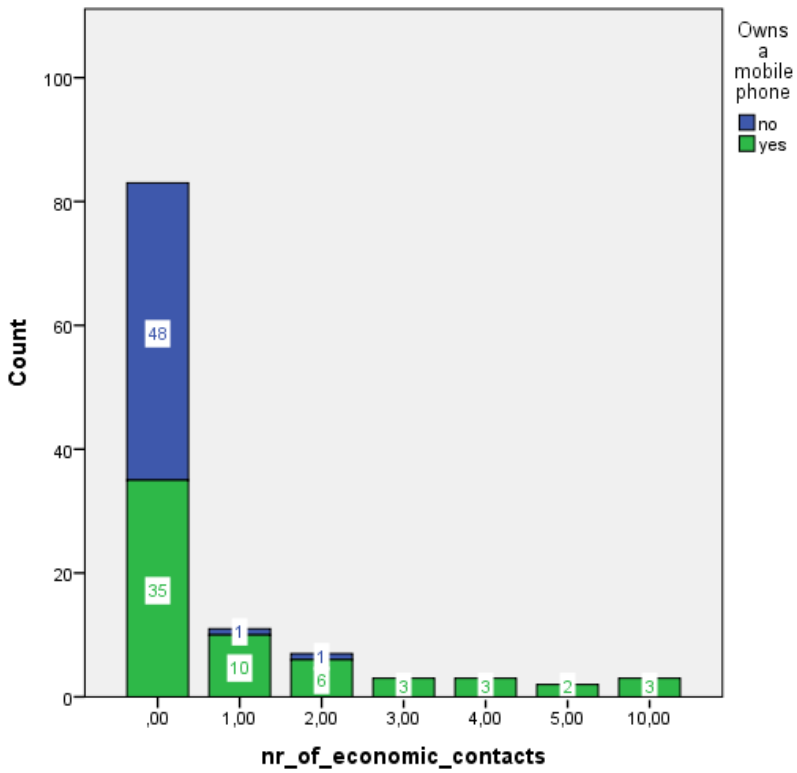


Figure 5.4: Economic network

One respondent (household 4.1), who works as an accountant, told us that the mobile phone has provided many economic contacts and that it also helps him in his work, because colleagues and customers can reach him on his mobile phone while he is not at work yet. He explained that, in this way, it happens that in his private time, or when he is on his way to his work in the morning, he is actually already 'working' because he is connected with his customers.

To get a better understanding of the economic networking potential of the mobile phone, we asked people, 'do you think the mobile phone provides the most important economic connections for this household?'. From people in agriculture, a much heard answer was that the mobile phone connects them with buyers who want to buy their crops. Some peasants were talking about people from their neighbourhood or people at the nearest market, while others were talking about wholesalers and truck drivers. For the ones who were cultivating land for others or with just a small plot of own land, harvest is mainly for own use, but when there is a surplus, they immediately call potential local buyers or market people to tell them what they have to offer. For the peasants with larger plots of land and consequently more harvest, it turned out that the connectivity of the mobile phone had created a logistical system that made it possible to reach other markets, even in Kigali. They would call a wholesaler or truck driver during harvest, negotiate on a price and ask them to come and pick up the harvested crops at their local business centre. The wholesaler or truck driver then takes the crops to markets in Musanze, Gisenyi or even Kigali. In this way, peasants are connected with more markets and thus have more opportunities to make money by selling their harvest at those markets where the prices are the highest.

For people in crafts, the mobile phone also provides a lot of economic possibilities. A husband of one of the respondents is a barber, and his wife told us that his business has been really boosted since he got a mobile phone (household 8.1). Another respondent is a butcher (household 10.3) and for him, the mobile phone means he gets a lot more customers. Next to going to markets to buy animals for slaughter, he also buys from people who call him when they have an animal for sale. Therefore he has more meat to offer to customers and thus more income. He adds that people spread his mobile phone number among their own network, which puts him in contact with even more potential animal sellers.

The economic networking potential of the mobile phone was also reflected in responses from people who said that the mobile phone provides 'job opportunities', which are mostly informal and part-time jobs in agriculture. One of the respondents (household 5.3) mentioned that people in rural Rwanda really want to help each other out, which means that people will tell each other when there is a job opportunity somewhere. It is thus not only the job provider who is contacting those who want to work via his economic network. Friends, neighbours, family members and the like are also making each other aware of job opportunities. A good example is a lady (household 7.5) who got a phone call from a friend who told her to come to the village centre, as someone was hiring people to build terraces to create arable land. She went there immediately and had been working for some months when we met her. In this way, her social contact provided her with an economic opportunity. One of the respondents (household 17.4) said that she arranges part-time jobs for one of her children (aged 16) and someone else (household 19.2) indicated that since he had a mobile phone he has had several jobs. He told us that *"when you have friends, you have many people who can help you to get new job opportunities"*, which again underlines that it is difficult to divide social and economic contacts. One of his experiences was that with a mobile phone you can react very quickly

on a job opportunity that comes by as you can just call the person who is hiring people and tell him that you are interested. He explained it further by saying that, without a mobile phone, you will have to travel to that particular person, which takes time. Very precious time, when it turns out that by the time you meet him it turns out that there are no jobs available anymore. Another respondent (household 12.4) told us the mobile phone is providing many job opportunities for her son, as he uses his mobile phone to call people who have hired him before to ask if there are any new job opportunities for him. In this way, he is setting up his own economic network. A similar experience was shared by another respondent (household 11.6), who told us that when she had a mobile phone and she was doing a seasonal job, she would give her mobile phone number to her boss, who would then call her again the year after for the same job.

Many respondents told us that the mobile phone makes it possible for them to ask for help when they are really struggling. One of them (household 3.4) told us that she is having a really hard time since her husband died a couple of years ago and that it could happen that she and her children sometimes went to bed without eating the whole day. Her two brothers, who live in another region close by, gave her money to buy a mobile phone. Now, when she does not have food, she calls her brothers for help, who then provide her with some money or food. Another example (household 12.3) was given of a lady, whose household also started struggling when her husband passed away. Her children were not going to school anymore and they had many problems. By borrowing someone else's mobile phone and contacting a relative in the United States, she was able to tell that relative about her situation. From then on she started to receive remittances from her relative and it changed the situation of the households' livelihood immediately; she has her own business in trading now, her children are going to school again and she is having a house build.

Only a couple of respondents indicated that they were not using the mobile phone for economic purposes, but the general feeling is that the mobile phone contributes to people's livelihoods financially. It gives people the possibility to create a network that can be reached at any time and from any place. As we have seen, this instant networking has led to the blurring of a once clear proposed division of social and economic networks. The fast and direct connectivity that is provided by the mobile phone strengthens the overlap of social contacts and economic contacts and vice versa. A solution for this would be another way of thinking about networks. These people do not have a separate social and economic network anymore, but all contacts should be considered as one network in which different types of flows (social and economic) are sent. When we include the blue bars from both figures (Figure 5.3 and 5.4) in the analysis, we can see that the mobile phone has an effect on someone's daily network. Out of the respondents without a mobile phone, only two people indicated that they had economic contacts among their most important daily face-to-face contacts. For someone without a mobile phone, it thus seems it is harder to be involved in an economic network, as 96% of the respondents without a mobile phone answered that they only had social contacts. It should be noted here that face-to-face contacts are something different than mobile phone contacts. However, the respondents with a mobile phone indicated that their most important daily face-to-face contacts were also the people they called and texted the most. For some this may be true, as for others I have some doubts as it sometimes seemed that respondents told us it was the same in order to be done with that question.

### 5.4 Mobile applications

Another aspect of connectivity with a mobile phone is the access to countless mobile services and applications. During the fieldwork we encountered three clear examples; market information, agricultural information and mobile money. Many peasants indicated that the mobile phone is important for them as it gives them information about market prices. Some meant by this that they would just call someone at the market place and ask them for some price information, while most peasants referred to a SMS-service; e-Soko (www.esoko.gov.rw). You can subscribe for this service by sending a text message to a particular number and according to your individual wishes, you can get information about crop prices through text messages every day. It is a well-known service in rural Rwanda and many peasants indicated they were using this to sell their crops for the best price possible. This service is also interesting for people who might not necessarily want to sell goods on the market, but only want to buy. When they see that the price of a certain good they want is low, it will persuade them to buy it. It thus works in both ways, for selling and buying crops or goods.

Concerning agricultural information, peasants with a mobile phone told us that they can get information on the quality of seeds and fertilizer through the mobile phone. This was said to work in the same way as with the market prices, via a SMS-service. In the case of a dryer period, which was sometimes the case in Bugesera, peasants could get information about alternative agricultural activities and the weather through their mobile phones.

The possibility to send and receive money through the mobile phone was clearly the most heard benefit among the respondents. As already mentioned, most people were not using this structurally, as with one respondent (household 8.5) who told us that they receive money from family and friends when they really need it. The fact that the mobile phone makes it possible to get support was very important for many respondents, as one respondent (household 16.2) told us that he could just call one of his friends when they are really struggling. His friends will then send him some money and this gives him a secure feeling. For some households it was clear that they were receiving structural support and some of them had a relative living abroad. One respondent (household 14.3) told us that she has a sister living in France, who supports this household every month by sending money through the mobile banking system. This money is used for school fees and the respondent told us that because of this support she is able to send her children to boarding school. Another respondent (household 18.4) told us that one of his children was studying in Europe and was sending them money through the mobile phone, which is contributing a lot to his household. With the help of that financial support he was able to send some of his other children to boarding school and he hopes that they also get a chance to study abroad. For the oldest head of the household from the sample, an 87-year-old lady (household 20.4), the mobile banking system turned out to be very important too, although she did not have a mobile phone. She was living together with one of her grandchildren as her other children had already moved out and were now living in the same area and one of them was living in France now. Her other children do have a mobile phone and they receive money from the one that is living in France. Part of that remittance is then given to their mother, who also indicated that she sometimes uses the mobile phone of one of her children to stay in contact with all of her children. Next to sending and receiving money, the mobile money system also provides possibilities for people to save money on their account. One of the respondents (household 10.5), who was a student, told us that he was already saving money on his mobile money account which he intended to use after his study to start up his own business. However, he was not able to save that much money already, as he was also helping out his household with that money during hard times.

For peasants, there was another crucial benefit from having a mobile phone, as in the Nyabihu district they told us that without a mobile phone it is difficult to get access to fertilizer (household 10.1). Nyabihu borders the Volcanoes National Park, which outstretches over the border area of Rwanda, Uganda and DR Congo and forms a rather uncontrollable import and export market between the countries. Many Rwandese farmers were selling their government-sponsored fertilizer on that market for high profits. In an attempt to prevent this, the Rwandan government introduced a registry system; when you register you will get fertilizer for a reduced price, while without registering, it is very expensive to buy fertilizer (household 8.4). The registration however, is based on a telephone number, which means that people without a mobile phone or SIM-card do not have direct access. Consequently, we encountered people in that research area who just had a SIM-card to get access to fertilizer. Although we only saw this in the sector of Jenda, which directly borders the Volcanoes National Park, things like this can give a different image of that area statistically. When those people only buy a SIM-card for the purpose of getting fertilizer, this means that they are formally registered as a telephone subscriber, while they are not using a mobile phone. This brings us back to the fact that statistics on mobile phone use in Rwanda should be viewed which caution, as issues like this make those statistics slightly more unreliable.

**5.5 Connectivity without a mobile phone**

Next to the impact of having a mobile phone, there is another group, of which examples have already been mentioned a couple of times; those without a mobile phone. As we have already seen, respondents without a mobile phone barely have economic contacts (Figure 5.4) and the fact that they do not have a mobile phone is mostly caused by their financial situation; they are struggling against poverty. To the question, 'do you consider a mobile phone as a priority?', most respondents answered 'no', as they mentioned food, clothes, shelter and money for school fees as priorities. Almost everyone answered something in the direction of, *"I do not have enough money for it, but once I have enough, I will definitely buy one"*. How much money 'enough' is, is hard to say, but out of all the people from the sample that have a mobile phone, or once had one, the average price was around 12,000 Rwandan francs, which equals almost € 14. The most expensive phone among my research sample was 80,000 Rwf (€ 92) and the cheapest one only 2,000 Rwf (€ 2.30). There was a household (12.5) that had sold its mobile phone because they were really struggling, but this had an even bigger negative effect, as the household is struggling even more now, because they cannot get job opportunities anymore via the mobile phone. When we asked the respondent from this household why it is not possible to get job opportunities via face-to-face communication, she told us that if someone wants to hire people, he will just go through his contact list on his mobile phone, instead of going to people's homes and ask them face-to-face, which takes much more time. One respondent (household 5.4) told us that *"there are more serious issues for me than thinking about getting a mobile phone"*, while someone else (household 8.4) said that it is not her first priority *"as you cannot have primary benefits from it; you cannot feed your kids a mobile phone"*.

Knowing that poor households are already excluded from many opportunities in a society where an increasing number of people are using a mobile phone, it is interesting to see what the effect of not having a mobile phone is on their sense of connectivity. By asking them, 'do you feel not having a mobile phone gives you fewer opportunities to meet other people?', we tried to get to know if their networks are developing or not. Many respondents answered that they feel they are limited in meeting other people and that they are left with only their neighbours to talk to. Some respondents (household 1.7, 2.2, 5.1, 12.5 and 15.5) even told us that they felt excluded from society and had a

'lonely' life. Others (household 8.4, 12.1, 15.3 and 20.7) told us that it is hard to keep in touch with people who get a mobile phone, as they start to organise their social life through the mobile phone and forget about their friends without a mobile phone. This gave the respondents the feeling that they were left behind and one lady (household 12.1) told us that she really envied people with a mobile phone as it seems that it is very easy for them to stay in contact with friends, as they just call and text each other, while she had to put a lot of extra effort in to keep her existing friendships alive.

In terms of future economic opportunities, not having a mobile phone has many consequences. Respondents indicated that they were missing out on job opportunities, as one unemployed lady (household 5.4) tried to explain to us that because she did not have a mobile phone, she had not had one job opportunity up to now. Other respondents (household 6.2, 10.3, 18.3) told us they miss out on job opportunities every time because *"people who have a job to offer cannot tell me via the mobile phone where I need to go for that job opportunity"* and for them it is easier to just call someone instead of going by houses and ask people to work for them.

Borrowing someone's mobile phone is often mentioned by these respondents and there was a rather interesting comment that came with it. People (household 7.6, 10.2, 12.3 and 20.2) told us that when they would use a mobile phone of someone else, they would have no privacy, because the owner of the mobile phone will be around during the conversation. One respondent (household 20.2) told us she suffers from AIDS and when she feels really bad she has to borrow a mobile phone to call a doctor or someone else to come and help her. It is very hard for her to do this as she then immediately knows that the person she borrowed the mobile phone from, who is listening to the conversation knows she has AIDS. But there is nothing she can do about it, as she really needs help when she feels ill. The issue of privacy was further underlined by a respondent (household 9.1) who told us that the mobile phone has brought her more privacy because she can now directly call with people she wants to talk to. She explained that before, if she wanted to send a message to a friend in Musanze and she could not go there herself, she would have to ask someone else, who was already going there, to pass on her message. Then there would be no privacy for her as this person would immediately know what the message was about.

Next to having money for a mobile phone it is also necessary to keep in mind that using a mobile phone costs money too. For some people without a mobile phone this was well known, as they told us that if they would buy a mobile phone, they would not able to use it as there would be no money for airtime or charging (households 5.2 and 10.3).

People without a mobile phone have high expectations of the impact of the mobile phone. They say that they will meet many new people through the mobile phone and that getting more job opportunities will be easy. This impact was certainly seen among some respondents without a mobile phone, but had one before. One lady (household 2.3) told us that since her mobile phone was broken they really started struggling; no job opportunities and no one was reachable anymore to help them. Here, it seems that people get dependent on their mobile phone network, but when this disappears, they are not able to organise a face-to-face network anymore.

**5.6 Conclusions: the mobile phone and connectivity**

Many people in rural Rwanda have a mobile phone and their connectivity is hugely impacted by this. They start developing an economic network that provides them with informal and part-time job opportunities, set up logistical systems for their trade business, get information about markets and prices and they are able to reach more markets. Most of their contacts are social and economic at the same time and the mobile phones create financial security for many households as they can call people and ask for help; support via mobile money or help in general. For some households, structural support leads to economic development of their livelihood; they can provide their children with better education by sending them to boarding school, which ultimately gives these children a better chance to get well-paid work, after which they start supporting their parental household again.

It seems that people without a mobile phone are being excluded even further, which leads to more inequality among the relative poor rural Rwandans. They seem to be trapped in a vicious circle; not having a mobile phone restrains them from building up an economic network and it makes it even harder to maintain their social network, they miss out on job opportunities and other benefits (example of fertilizer) and they cannot meet new people as they are stuck to the locality of their village; they do not have access to the space of flows. However, they have the possibility to borrow a mobile phone from someone else and be active in the space of flows on an irregular basis. But exactly this irregularity is likely to affect the benefits of being active in a space of flows; you are not connected instantly. Altogether, it still gives them access to the space of flows.

Overall, an important notion has to be made here about something that has an influence on the connectivity and thus on what someone can get out of using a mobile phone; the quality of that mobile phone. In the first part of the questionnaire, respondents were asked to indicate where they had bought their mobile phone and of the 151 individuals we got information about, two-thirds had bought it in a second-hand shop and one-third bought or got it as a present from a friend or relative. During the fieldwork we noticed that in some households where both the (male) head of household and his wife had a mobile phone, the wife usually got her mobile phone from her husband when he decided to buy a new(er) one. Almost all of these mobile phones were at least second-hand. During the fieldwork we got a better impression of the quality of the mobile phones, because respondents immediately showed their mobile phone (if they had one) when we asked them to participate in this research about the mobile phone. Interestingly, some of these mobile phones were held together by a rubber band and were visibly damaged. Some people indicated that their mobile phone was almost unusable, but as long as they could still call someone it was fine. It was clear that this affected the possibilities those people had with their mobile phone compared to those who had a properly functioning mobile phone. Although I do not have solid quantitative data about whose mobile phone was almost broken or not, it does show that we should keep in mind here that 'having a mobile phone' in general, does not automatically mean that you can make use of all the described benefits and effects.

# 6. The mobile phone and mobility

The second part of the analysis is to see what the impact of the mobile phone is on mobility. During the second day of fieldwork in Nyabihu we already encountered someone who had a defining experience with this; *"First, when I wanted to visit relatives in Bugesera, I would travel there and stay for some days. Just the travelling would cost me 13,000 Rwf, but now I use my mobile phone to call or text them when I need them, and that only costs 100 Rwf"* (household 2.2). Instead of travelling, this person thus decided to just call with his relatives as this saves him a lot of money. It is quite a logical development, but is this representative for all respondents, and for all types of mobility? In order to get a better understanding of the impact of the mobile phone on mobility, this chapter tries to analyse what the actual impact is on three aspects of mobility; frequency, distance and direction. Are people travelling less because of the mobile phone, or maybe even more? And when they travel, do they travel longer or shorter distances? The first section of this chapter gives a general overview of the mobility of the sample. The following sections deal with the frequency of mobility, distance and direction. The last section will take a closer look at the mobility of people without a mobile phone.

### 6.1 Mobility of the sample

First, it is interesting to see if the respondents have a previous place of living, which indicates that they have migrated from one part of the country to the place where they are living now. Only those whose previous places of living were located in another district have been included in this analysis. For this we also looked into the birthplace and current place of living to see if there was a difference. In Figure 6.1 we can see that almost 30% has migrated to the area they are currently living in. Some of these migrants indicated that they came back from countries as Uganda and Congo after the genocide, while some did not want to talk about that.

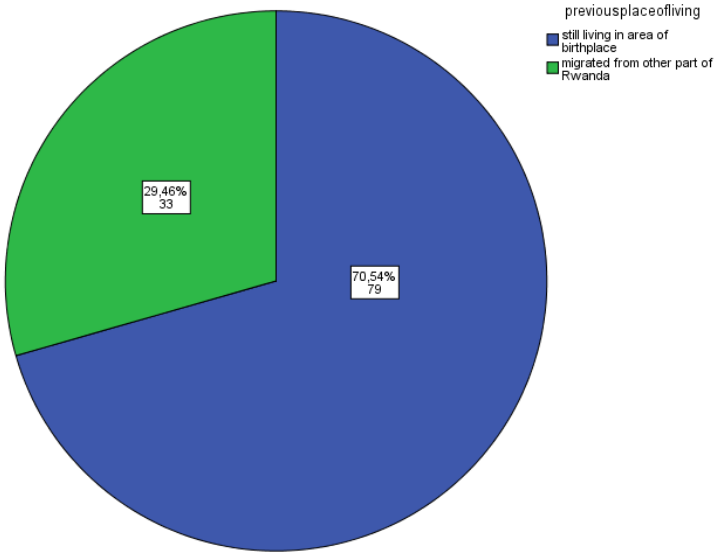


Figure 6.1: Still living in area of birthplace (blue part) or migrated from other part of Rwanda (green part).

More than half of the people we spoke to in Bugesera indicated that they migrated there from another part of Rwanda, while in Nyabihu this was just over one-third of the people. This is quite logical considering the characteristics of the two areas (section 4.2). Out of the 33 migrants, 16 have a mobile phone and four had a mobile phone before. It is hard to say there is a direct relation

between having a mobile phone and (internal) migration, but we heard quite a fascinating story from a respondent in Bugesera (household 18.4). She told us they were living in the south west of Rwanda before, but when they got a mobile phone they came in contact with some relatives who had already moved to Bugesera. These relatives gave a lot of information about Bugesera and persuaded them to come there too. According to the respondent, *"it is all because of the mobile phone that we are living here now"*.

By asking people how often they were travelling on a daily, weekly and yearly basis, we tried to get an image of their mobility. Their daily movements are limited to only necessary mobility over short distances; going to the market, going to their plot of land, going to work or just going around in their area. For these travels people are tempted to walk, because public transport costs money. We met people who indicated that they sometimes walked 'for a couple of hours' to get somewhere. Weekly visits were hardly indicated and for yearly visits respondents said they visited relatives in other regions of Rwanda once, twice or more times a year. There were also some respondents that travelled to other parts of the country for economic purposes. Out of the 112 respondents, 38 indicated that they were only travelling in the near of their village. A total of 53 people, of whom 32 had a mobile phone, said they travelled at least once a year for social purposes, and one of them, who also had a mobile phone, stayed longer than a month at his destination. Some respondents told us that when they travelled to relatives or friends they sometimes stayed over for one night or a couple of days, while most of them indicated that it was only a day travel. For these longer distance travels, all respondents are reliant on public transport, except for some people who sometimes ride along with familiar truck drivers and one man who has a colleague with a private car (household 4.1).

There are eight people of whom five have a mobile phone, who travel for economic purposes at least once a year and three of them, who all have a mobile phone, are staying at their destination for longer than one month. They can be considered as labour-migrants, as they go and live in another part of Rwanda for some time of the year to work or to search for work. One of these respondents (household 2.5), who was already active as part-time construction worker in his local area, told us that since he got his mobile phone he has been doing construction work all over the country; *"when they need me, they will just call me and I will go there"*. He added that normally he stays there for at least one month, but it has happened already that he was not home for three months. Another nine respondents told us they travelled to friends and relatives at least once a year for social and economic purposes. As was with connectivity and people's networks, we see that the division between social and economic is also blurring for mobility. People start to see economic contacts as friends and the social contacts they are visiting provide them with economic opportunities sometimes. An example here is a respondent (household 10.1) who goes from Nyabihu to Kigali twice a year to visit his brother. While he is there he also does some secretary work at his brother's cooperative.

**6.2 Frequency**

Does the mobile phone make people travel more, or less? And are there people whose mobility is not affected at all? To get to know this, we asked the respondents, 'do you think the mobile phone influences your travel behaviour?'. Their experiences were diverse, but can be categorized in three outcomes; people who told us they were travelling less since they had a mobile phone, those who were now travelling more and people who told us that it was actually both. In Table 6.1 we can see an overview of what all the respondents' experiences are. Instead of 50 people without a mobile

phone, there are now 39 people without a mobile phone, as there were 11 respondents who did not have a mobile phone at the time of the questionnaire, but had one before. They thus know how it is to have a mobile phone and how this affects their mobility, so their experiences were also taken into account for this analysis.

| | | Frequency | Valid Percent |
|---|---|---|---|
| Valid | no mobile phone | 39 | 34,8 |
| | travels more | 24 | 21,4 |
| | travels less | 41 | 36,6 |
| | travels more and less | 8 | 7,1 |
| | Total | 112 | 100,0 |

**Table 6.1: Frequency of mobility influenced by the mobile phone**

The major part of the people with a mobile phone has the feeling that they are travelling less since they have a mobile phone. The most heard experience was that instead of visiting someone for social reasons, they would just call and tell each other over the mobile phone how everything was going. The respondents indicated that this saved them a lot of money and time, which they could use for other purposes. Instead of visiting a relative four times a year, they were now only visiting them once a year as they stayed in touch with each other weekly via the mobile phone. An interesting point that came up here was, that when we asked people if their relationship had improved since they were visiting people less but just stayed in touch through the mobile phone, they (household 3.3, 4.2, 4.4, 20.6) answered in the direction of *"yes, as it is way better to talk to someone weekly via the mobile phone, instead of visiting them only a couple of times a year. Now you really know what is going on in their lives"*. People thus feel they are part of other people's lives when they are connected with them.

Another reason why people are travelling less because of the mobile phone is that people are able to organize their travels much better. Before, when someone visited a friend nearby, he would just go there and see if his friend was present. This led to many inefficient travels, as it happened sometimes that the person you were visiting was not there. But nowadays, when you have a mobile phone you can call someone before you go and visit him. People are thus making appointments with each other, which results in very efficient travel behaviour, and respondents indicated that because of this they were travelling less. One of the respondents (household 19.2) explained this further by stating that *"society is becoming more and more a planned system, people are making appointments and plan when and where to go, they start to organise themselves more and more"*. When we asked him what he thought about this, he added that *"it is a really good thing, as it makes people more aware of the future; where will you go and when, people get more sense about time"*.

Some peasants also indicated to travel less since they have a mobile phone. Because they can get market information through the mobile phone, they do not need to go to the market anymore. The money that is saved because of this can be reallocated to buy fertilizer and better quality seeds. The saved time can be invested in extra agricultural activities, while they can still socialize with friends and relatives through the mobile phone. Furthermore, some peasants indicated they have started to expand their activities from only cultivating to trading, without increasing their mobility. Because they are now able to get in contact with more potential buyers they can arrange a lot of things through the mobile phone. An example here is from a respondent (household 10.1) from Nyabihu,

who is selling his crops on markets in Kigali. He contacts a businessman in Kigali, sends his crops there and receives his money via the mobile banking system. He said that *"without a mobile phone this would be unthinkable, as I would have to travel to Kigali every time I want to sell my crops there*", which would cost him a lot of travel costs.

The mobile money system was a reason to travel less for more respondents, as they (household 2.1, 14.3, 16.2) told us that instead of travelling to relatives and giving them money, they now send money through the mobile phone. Another very clear example where the mobile phone makes people travel less was given by a respondent (household 17.1) who told us that in the case of a wedding, you have to invite people by going to their houses and invite them. If you have a large family this is quite a time-consuming task as you have to travel a lot, but with a mobile phone it is very easy to just call your family members and invite them. There is a comparable effect with a funeral, as it sometimes happens that someone dies while one of his children is living at the other side of the country. Before, the family would have to send someone to that child and tell him or her the sad news after which it will be a race against the clock for that child to be at the funeral (as it is normal in Rwanda that people who pass away are buried the next day). With a mobile phone these unpleasant situations can be overcome, as the child can receive a phone call and be on his way to his parental house immediately (household 9.4). We encountered a similar situation during our second day of fieldwork, where a respondent (household 2.1), who was usually absent as she was living in Kigali most of the time, told us that she got a phone call from relatives a couple of days ago. She was told that her father was in a very bad condition and was probably going to die in the coming days, so she immediately travelled up here and was still able to see her father before he passed away. As another respondent (household 19.1) put it, *"basically the only reason to travel to family or friends is when somebody passes away, for everything else you can just use the mobile phone"*.

There are also people who indicated that they are travelling more since they have a mobile phone. Almost all these travels were economic related, as the respondents told us that they travel more now because of the job opportunities and other economic related possibilities they got through the mobile phone. One of the respondents (household 14.1), who is member of a local agricultural cooperative, told us that her mobility increased a lot, because she attends a lot of trainings and visits other peasants for her cooperative. Another respondent (household 18.1) mentioned that the mobile phone got her into a lot of trading business, while someone else (household 9.5) told us that she looks for work in a wider area now, because *"the mobile phone gives a strong feeling of security and confidence. I can now go and work at places that are further away and still be in contacts with my people at home and when something happens I can just call them to help me out"*. The already mentioned labour migrants with a mobile phone are other examples of people who travel more because of the mobile phone.

The mobile phone can also lead to increased mobility of some children, even if they do not have a mobile phone themselves. Namely, some respondents (household 5.5, 6.1, 9.4, 13.6, 14.1, 14.3 and 15.3) indicated that when parents have a mobile phone it is easier for them to send their children to boarding school, because they can pay school fees through the mobile money system and be updated about the development of their children through the mobile phone of teachers. This means that next to getting better education, these children are travelling more as most boarding schools are situated in urban areas.

Some respondents indicated that they were travelling less and more at the same time since they have a mobile phone. The explanation for this is that they told us they now travel less for social reasons, while they travel more for economic reasons. A respondent (household 2.1), who has a business in trading, told us that she now travels less to her children as she can just call them and know what they are doing. This gives her a secure feeling that has made her travel even more for her business when she knows that her children are safe at home.

**6.3 Distance and direction**

Next to the frequency of mobility, distance is also an important indicator when it comes to the changing mobility of people. We can roughly divide this mobility in national, regional and local scale, where longer travels are to be considered as national mobility and short travels as local mobility. For longer travels people have to take public transport. The regional mobility differs from the local mobility in the fact that most people are also dependent on public transport for this, while the local mobility is mainly done by foot. When we asked people about their local mobility, they told us that they are going to the market less because they can get market information through their mobile phone and if they want to speak to someone who lives nearby, they just give each other a quick call or send a text to get the information they want. Respondents told us that, since they have a mobile phone, they are only travelling when they are sure that it is efficient and beneficial for them. This effects the shorter distance travels a great deal as the many inefficient short travels are now reduced to just a couple of efficient travels that are arranged through the mobile phone. A contrary and very interesting experience was only mentioned once, when a single lady (household 1.5) told us that while she travels less to visit family or friends, she has to travel (half an hour walk) quite a bit up to the nearest rural centre to charge her mobile phone at a battery shop. This is probably also the case for other respondents who charge their mobile phone at a battery shop. Having a mobile phone creates a new necessity and a new movement for them; charging it at a battery shop for which they have to travel a short distance. Overall, we can conclude that the short distance travels or people's local mobility, such as going to the market or visiting friends and relatives in the neighbourhood, have decreased because of the mobile phone.

For the longer distance travels, we see that there is a difference between the intentions of the travels. When people get a call that there is a job opportunity a bit further away than they would have liked, they still go there. So economically they are willing to travel longer distances to other regions and these new mobility movements basically force people to start using public transport more in order to reach their new destinations. This means that these people really have to think about what is best for their livelihoods in the longer term. Accepting a part-time job that is a bit further away and for which it is required to use public transport has to be worth it, because people are spending more money on travel costs and it takes them more time. One respondent (household 3.3), who was working part-time in construction, told us that when he gets a call from a work supplier, he immediately knows what kind of work it is, where he has to go and what the payment is. With the help of that information he can assess for himself if the job is worth it mobility-wise. As before the mobile phone, it could happen that you would travel somewhere for work and upon your arrival you would immediately know that the job was not worth it, which means even more waste of money, time and energy.

People with a mobile phone and who have indicated to travel more, are more tempted to travel to areas that are unfamiliar to them. Some respondents indicated that they feel more secure and free

to move to places where they have not been before. Now they go there to visit relatives and friends they have not seen for a while or for economic purposes. When they do not exactly know where to go, they can just call someone and ask for directions. The already mentioned social control in the rural areas of Rwanda comes back here, as respondents told us they were more eager to travel because they had a mobile phone with which they could easily contact neighbours and ask them to check upon the situation at their home.

Another thing what we see concerning the direction of mobility, is that people are diversifying their mobility. They are willing to travel further and thus into new directions for economic related opportunities. Instead of having almost only rural-rural mobility, it seems that using the mobile phone can increase someone's rural-urban mobility. This is especially the case with peasants and traders who are now able to reach markets that are located in the nearest urban centres, such as Musanze, Gisenyi, Nyamata and Kigali. But also the respondents who told us that the mobile phone provides them with job opportunities are diversifying their mobility behaviour. And not solely those who are willing to travel further, to other parts of Rwanda, but even for those who get part-time jobs that are located in the region where they already live. Their everyday mobility behaviour is then changing because of the mobile phone, as they travel to their work a couple of times a week.

**6.4 Mobility without a mobile phone**

Those people without a mobile phone think that once they have a mobile phone, it will impact their mobility to a huge extent. We asked them, 'do you think not having a mobile phone makes you travel more?' and quite some respondents (household 5.1, 6.4, 8.3, 8.5, 14.4, 15.1 and 18.2) indicated that they would probably travel more if they had a mobile phone. They all mentioned that they would travel more because they mobile phone will provide them with more economic opportunities, for which they will travel. One lady (household 5.1) explained that when she has a mobile phone, many people will call and ask her to work on their fields and then she *"will travel to all those fields"*. Another respondent (household 12.3) explained that she would travel more if she had a mobile phone, because then she would not be afraid to travel to unknown places as she can just call people to help her with directions. However, most respondents think they will travel less, as they can just call with friends and relatives they would normally visit.

Those respondents who had a mobile phone before but lost it, shared their experiences of what happened when they suddenly had to live on without a mobile phone. One respondent (household 1.4) told us that when she got a mobile phone it reduced her travels and she got many more contacts and connections. When her mobile phone broke down she started to travel even more compared to when she had a mobile phone, because she tried to maintain her 'mobile' connections. This is also the case for a lady (household 11.1) who said that she is travelling much more again since her mobile phone broke down, because she *"has to visit someone every time there is a problem or a question"*. For another respondent, there seems to be an opposite development, as she (household 5.6) told us that when she had a mobile phone she arranged all her travels through the mobile phone. Now she does not have a mobile phone anymore, she cannot make any appointments anymore with other people and therefore, she feels that there is almost no reason to travel anymore.

### 6.5 Conclusions: the mobile phone and mobility

We have seen that someone's mobility is definitely impacted when he or she has a mobile phone, although it has highly diverse outcomes. For most people it means they are travelling less, especially for the yearly travels to friends and relatives that live further away. Visiting someone for social reasons has been substituted by being in contact with that person over the mobile phone. Respondents also indicated that this did not affect their relation, as *"the lack of face-to-face contact is no problem at all"* (household 20.6). Concerning economic related mobility however, people are travelling more. The mobile phone is basically diversifying their mobility movements as they are willing to explore new job opportunities that at the same time create new mobility movements. One respondent (household 5.3) told us that he got to know more people since he got a mobile phone and these people provide him with a lot of job opportunities in different places in his district and surrounding districts, which means higher mobility for him. The fact that the mobile phone makes it possible for people to diversify their mobility is quite an impact. It can make people even more aware of how they can develop their livelihoods further, because by getting different experiences they can learn how to react to certain difficulties they may face in the future. Their 'worldview', which for many people in rural Rwanda consists of their own village and surrounding region, is exceeding the boundaries of these localities and they become aware of the *space* they are now able to act in.

For people without a mobile phone however, it cannot really be said that the presence of the mobile phone in their society means that their own mobility has changed. However, their relative mobility has changed considerably, as they are still forced to make travels that people without a mobile phone no longer need to make. They have to travel to the market to get to know market prices, they have to travel to a friend to get to know how he or she is doing and they have to travel to other people to get job opportunities and be present in a (face-to-face) network. At the same time, they can see that people with a mobile phone are likely to develop themselves further by diversifying their mobility and by being more efficient in their travel behaviour. This can give those people without a mobile phone the feeling they are not 'moving' forward. Consequently, they can experience a sense of forced immobility; people around them are developing their livelihoods with the help of the mobile phone, while they are stuck to their current situation because they cannot move. It is likely they are getting less part-time job opportunities compared to people who have a mobile phone, which would mean their mobility decreases. We saw this with the respondent who, since her mobile phone was broken, had no reason to travel anymore. On the other side however, respondents indicated they were now travelling much more and told us that due to the increase of travel costs, it was very hard for them to maintain their former network.

# 7. Final conclusion

In this concluding chapter I try to connect the empirical findings with the theoretical basis of this research and furthermore, give some thoughts on what I consider the most important results. In the final section I will give an answer on the last research question, *is having a mobile phone a motor for further development of a households' livelihood in rural Rwanda and developing countries in general?*

### 7.1 The Space of Flows in rural Rwanda

For people in rural Rwanda, having a mobile phone means that there is the possibility to act in the space of flows. Their relation with time and space has changed dramatically as people become aware that they can basically influence, or 'work', their own time and space to such an extent that it suites them best. Visiting someone is not directly necessary anymore, as many things can be arranged through the new *time-space* created by the mobile phone. Someone's network defines what he or she can arrange via the mobile phone; with whom he or she is connected and what they can contribute to that particular person. This networking logic of the mobile phone has, in turn, an influence on how someone can produce space. Getting more contacts for economic purposes means that the economic *space* of that person is expanding and this is the same for social contacts. As an increasing number of people is using the mobile phone, an increasing number of flows is sent through these spaces. The result; it becomes harder to define these spaces as solely social or economic. For instance, calling or texting with an economic contact on a daily or weekly basis may develop a social relation too. This should not be considered as problematic, but rather as a positive development; people in rural Rwanda with a mobile phone are able to help each other more, because you only need to have someone's mobile phone number to put him in connection with a larger network. The other way around, someone with a mobile phone is also able to search for new contacts and opportunities himself.

Furthermore, the mobile phone ensures that people are planning their mobility movements. They are making appointments with each other for travels and will only travel when it is beneficial or satisfying for them. People are organising their everyday life more efficient and become increasingly aware of the future. Together with the fact that the mobile phone gives peasants the possibility to bargain crop prices through the mobile phone as well as it gives other people the possibility to know market prices directly, it seems that some sort of new awareness is created. It seems that they are becoming more actively involved in their struggle against poverty as they are able to develop their livelihood in a more organised way, in the space of flows. Because of the growing efficiency and awareness of people, society is changing; it is becoming a network society. Castells (1996) assumption that these network societies only exist between global elitist cities thus has to be revised, network societies are already up and running in rural Africa.

The rise of the network society in rural Rwanda does not imply that *locale* has become unimportant. Although the space of flows gives people with a mobile phone the opportunity to exceed the boundaries of their own local village with a push of a button, it is exactly this *locale* were some of them are still highly dependent on. Especially those mobile phone owners who do not use their mobile phone for economic purposes seem to be spending even more time at 'home' now. Many issues are dealt with through the mobile phone and do not involve mobility anymore. A clear example is sending money to relatives; instead of travelling yourself, sending someone else or sending it with the post, it is now possible for these people to send it through the mobile phone.

Because the possibility of just calling someone has substituted the need of travelling to that person to a large extent, these people are travelling less compared to when they had a mobile phone. They can use this 'saved' time for other activities, but does this lead to diversification of those people's livelihoods?

**7.2 Diversification of livelihoods**

While this research focuses on mobile phone use and its impact on connectivity and mobility, it provides significant insights into the diversification of livelihoods. Concerning connectivity, it seems like the mobile phone is giving people the possibility to get more job opportunities. As some peasants only have small plots of land that are just enough for self-subsistence, they are now able to get other part-time jobs and thus diversify their income. Those peasants who produce crops for selling can use their mobile phone to be connected with different buyers and markets. Because they are seeking the highest price in order to get the best profit, they are getting involved in the business of trading. What we saw in rural Rwanda, is that these 'new' traders also collected crops from other peasants (probably those who do not have a mobile phone) to have a bigger quantity to sell and thus have a stronger position in the negotiations. These peasant are diversifying their income by getting involved in trade too.

The willingness that some respondents showed to travel further for job opportunities is another indication of the possible diversification of their incomes and development of their livelihoods. Because of the connectivity that is provided by the mobile phone they can search for part-time jobs in a wider area. Details about these jobs can also be gathered via the mobile phone and this gives them the possibility to think about it and decide what is best for the development of their livelihood. Opportunities that were first out of reach and actually unknown, have now become accessible for those who really use their mobile phone for the economic development of their livelihood. The increased connectivity can then be an extra boost for someone to travel further for a job, as he or she can be connected instantly with 'home'. The experiences from respondents, who told us that the mobile phone makes it possible for them to check upon the situation back home by contacting neighbours while they are not home themselves, is a perfect example of this. Having a mobile phone does not directly lead to diversification of a livelihood per se, but it certainly provides more possibilities for diversification. Furthermore, it can contribute to the 'worldview' of these people and make them more assertive; becoming even more aware of the fact that their livelihood can be developed further.

This overall arising situation can be very useful for the realisation of the Vision 2020, as many rural dwellers who are already seeking work outside their local area should be facilitated with jobs in the commercial sectors to diversify the economy. These new jobs will be mainly situated in the urban areas, as the Vision 2020 focuses on regulating and stimulating urbanisation instead of preventing it. Ideally, this decreases the size of the rural population and gives the possibility to transform the agricultural sector from a mainly self-subsistence one into a more commercial driven sector. Because people are better informed about market prices and supply and demand, it is highly likely that a more transparent market situation is created. The already mentioned increasing awareness and efficiency among the rural population can have an important role in this. As an increasing number of people in rural Rwanda is getting access to the mobile phone, they will all be acquainted with the impact it can have. And after all, this can contribute to Rwanda becoming an ICT-hub for central Africa.

### 7.3 The disconnected and importance of quality

However, we should not forget that still a large part of the rural population is still 'disconnected' and does not have the same level of access to all the opportunities mentioned above. Out of the 307 adults (17+) from the sample, only 154 people had a mobile phone, which is slightly more than 50%. Knowing that the mobile phone provides so many possibilities and developments to those who have one, it is very important to acknowledge that there is still a large part of the population in rural Rwanda that is not benefitting from this. The assumption that everything will become better for them once they get a mobile phone is probably a false one, as we have seen with the people who have a mobile phone that not everyone is using it for structural economic or social development of their livelihood. This is underlined by some respondents (household 10.4, 14.2, 16.1, 16.3, 17.2 and 18.2) who gave their thoughts about this and said that *"in order to buy and use a mobile phone, you already need to have an economic basis first as you cannot already think about a mobile phone helping you to develop your household when you do not have the primary needs"*. Someone added that *"it is not like that when you buy a mobile phone you can suddenly run a business"*.

Another aspect that gives a bleaker perspective on the overall impact of the mobile phone is the quality of these mobile phones. For instance, when statistics show that 60% of a certain population has a mobile phone, the expectation is that all these people have full access to all the possible benefits of the mobile phone. However, having access to these benefits is highly dependent on the quality and condition of the mobile phone. We have seen that money is a determining factor in buying a mobile phone, but it is also an important factor in fixing the mobile phone when it is broken. There were some people who could not afford to have their mobile phone fixed and had to live on without one, with all the additional consequences. There were also people whose mobile phone was partly broken, but still usable for just calling or just texting. For others it was only possible to get called instead of calling someone yourself. It is fair to say that their possibilities with the mobile phone have been limited because of the quality and condition of their mobile phone. But they are still fully 'registered' as mobile phone users. The expectations of someone who has a mobile phone thus have to be adjusted a little bit, as it is not obvious that they can all use it to the full extent. This makes the group of people who can really use their mobile phone to develop their livelihood even smaller.

On the opposite, there is the possibility for people without a mobile phone to borrow it from someone else. It seems that this is definitely the case in households where one or more members already have a mobile phone, as wives, without a mobile phone, indicated they sometimes borrow the mobile phone from their husband for social reasons. For people from households without a mobile phone however, it seems there are privacy issues that hold them back from borrowing someone's mobile phone, although they indicated they would borrow a mobile phone for emergency situations. For others, the 'culture of sharing' was more present, as they indicated to borrow their neighbours' mobile phone without mentioning privacy issues or emergency situations. So in one way or another, these people can have access to the space of flows, but it is interesting to see if they can really use it for developing their livelihoods as they are not instantly connected.

### 7.4 Mobile phone as motor for development?

For me, it has become clear that the mobile phone can certainly play a role in the development of household livelihoods. It seems like the presence of the mobile phone is, among other things, changing the society slowly but steadily. Together with their growing networks and more efficient

mobility behaviour it seems they are better able to manage their households in their struggle against poverty. But as we have seen, having a mobile phone is not a guarantee for success; it only provides more possibilities for people to develop their networks, make their mobility more efficient and diversify their livelihoods. The group of people without a mobile phone is still an existential one and for further research it would be crucial to see how they are coping, knowing that they can only have irregular access to the space of flows by borrowing a mobile phone from someone else. For the people with a partly broken mobile phone it is also interesting to see how this affects their activities in the space of flows. The group of people who had a mobile phone before, but do not have one anymore gave already very significant insights on being able to take part in the space of flows, compared to not being able to take part anymore. Therefore, a research with a more qualitative dimension of mobile phone use, focussing on (partly) broken mobile phones and on the sharing of mobile phones could provide insight on how this group of people is developing their livelihoods.

For the implementation of Vision 2020 it would be relevant to see if the mobile phone plays any role in stimulation of rural-urban mobility and migration. Does the network, provided by the mobile phone, make it possible for people in rural Rwanda to go and live and work in urban areas? Does the diversification of livelihoods lead to less people being active in agriculture and them finding new 'job opportunities' in upcoming sectors? Will the upcoming network society, in combination with Rwanda's goal to become a regional ICT-hub be a further boost for the rest of the rural population without a mobile phone to be connected? These are all important questions that can be answered by further research on the impact of the mobile phone and it is highly likely that further research can give new insights for the Rwandan government to adjust or improve their policies. It is thus vital for the Rwandan government to know how the everyday life of Rwandans is affected by the mobile phone in order to refine the Vision 2020 and reach its goals.

In conclusion, it can be said that the mobile phone gives people the possibility to develop their livelihoods in their own way. They can build up a more efficient and commercial economy from the basis; from their own livelihoods. And that is exactly why I think 'mobile development' should be a crucial element in the strategy of developing countries to overcome their struggles. The awareness people get from it, the network society it creates and the widening world view it gives, makes the mobile phone a vital tool for fundamental changes in social and economic aspects that ultimately lead to the development of the livelihoods of these people. Acknowledging that livelihoods are increasingly developed in a new dimension of *time* and *space* would already be a good start for further research on 'mobile development'.

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Appendix 1A

*Beyond the mobile phone: The impact on livelihoods in rurban Rwanda*

Province: Name of household:

District: Date:

Sector:

Village/Cell:

**A. HOUSEHOLD: this sections aims to get an overall image of all the members of the household (includes those who live in the house/compound and those children who live elsewhere).**

| **HH member ID** | **Name (in full) Head of Household first** | **Resident**<br><br>1. Resident<br>2. Usually resident<br>3. Usually absent | **Relation to HH head**<br><br>1. head<br>2. spouse<br>3. child<br>4. father/ mother<br>5. brother/sister<br>6. other family: specify<br>7. other non-family | **Gender**<br><br>1. Male<br>2. Female | **Age** | **Birthplace**<br><br>specify Location | **Previous place of residence (before current one)**<br><br>Specify location, if member is *usually absent*, please give the current place of residence. | **Highest level of education completed** | **Profession** |
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**B. MOBILE PHONE: this section aims to get an oversight of the households mobile phone assets of all household members (includes only those who live in the house/compound)**

| Nr. | Owns a mobile phone<br><br>1. Mobile phone<br>2. Smart-phone<br>3. No mobile phone | Since how long?<br><br>In years and months | Frequency?<br><br>1. Continuously<br>2. Once an hour<br>3. Couple times a day<br>4. Once a day<br>5. Couple times a week | Purpose?<br><br>1. Calling<br>2. Texting<br>3. Internet<br>4. Mobile-banking<br>5. Other (specify) | How much airtime do you use weekly?<br><br>Estimated amount in RWF. | How did you purchase your phone?<br><br>1. Shop (Tigo/MTN/Airtel, etc)<br>2. Family/friend<br>3. Other (specify) | Did you pay for your own phone, and how much?<br><br>Estimated amount in RWF. | How many phones have you already had? | Where do you charge your phone? How do you pay for this (specify)?<br>1. Home<br>2. Batteryshop<br>3. Other (specify) |
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Appendix 1B

*INTERVIEW:* in this part, one member of the household is interviewed in-depth. The selection of a member is dependent on his/her usage of the mobile phone and will be done on location. ID-number of household member that is being interviewed:

**IMPACT ON CONNECTIVITY: this section aims to understand the impact of the mobile phone on your everyday connections.**

- Who are the five most important contacts in your everyday life and do they have a mobile phone (give relationship and reason for contact)?

- Which five people do you call/text the most on a daily basis (relationship and reason for contact)?

- Who of your contacts lives the farthest away (abroad) and what is the reason for being connected?

- Do you think the mobile phone provides the most important economic connections for this household (professional)? Please explain (examples…).

- Do you know more people since you use a mobile phone? Please explain what types of contact (social/economic) and explain if and how they contributed in developing your livelihood in any way.

**D. IMPACT ON MOBILITY: this section aims to understand the impact of the mobile phone on your everyday mobility behavior.**

- How often are you travelling, for what reasons and how long and with whom do you stay?

  Daily:

  Weekly:

  Yearly:

- Do you feel you are travelling more than 10 (or closer to 5 years if interviewee is younger) years ago? Please explain.

- Do you think the mobile phone influences your travel behavior? Please explain (examples…).

- How do you arrange your daily/weekly travel and are you dependent on other people for your travelling? Please explain.

- Do you communicate by mobile phone during your travel? And with whom (example: people you are travelling to)?

**E. HOUSEHOLD MEMBERS WITHOUT A MOBILE PHONE.** ID-number of household member that is being interviewed:

- What is the reason for this household member not having a mobile phone?

- Do you want to have a mobile phone, or are you planning to get one (for example saving money to buy one)?

- Do you consider a mobile phone as a priority? If not, what do you consider as priorities? Please explain.

E.1. Connectivity:

- Who are the five most important contacts in your everyday life and do they have a mobile phone (give relationship and reason for contact)?

- Do you feel not having a mobile phone gives you fewer opportunities to meet other people? Please explain.

E.2. Mobility:

- How often are you travelling and are you dependent on other people for your travelling?

Daily:

Weekly:

Yearly:

- Do you think not having a mobile phone makes you travel more? Please explain.

**F. Ubuhinzi** ID-number of household member that is being interviewed:

- What do you grow? And where do you get the seeds?

- When your crops are infested, what do you do and who do you ask for help?

- How often do you meet an agricultural expert (sector agronomist) in a crop season? And how do you communicate?

- Do you think that the MP can help or has helped you to reach the agricultural assistants easier?

- How many times do you go to the market to sell your harvest (produce)?

- In which area of your agricultural activities do you think a MP would help or has helped you to improve the most?

- Has access to MP increased your agricultural income?

- Has access to MP increased your market participation?

- Has access to MP helped you to identify better market opportunities?

- Has access to MP reduced your transportation costs?

**G. FINAL REMARKS**

**-** Do you think a mobile phone can contribute in the livelihood of a household in general? Can you give examples of households that changed their situation?

- Are there any other things you want to mention about using a mobile phone in relation to the economic and social development of your household?

Thank you for your participation / Murakoze Cyane!

Appendix 2

# INFORMED CONSENT FORM

| | |
|---|---|
| **Title of the Project** | Mobile phones in rural Rwanda; beyond the mobile phone… |
| **Participant's name** | |

**Household questionnaire / semi-structured interview**

I would like to invite you to take part in this questionnaire which is part of my master studies in Human Geography in the Netherlands. The goal of my research is to learn how the use of a mobile phone is enabling Rwandan people to take part in a 'digital' society and to what extent this is influencing their livelihood development in terms of connectivity and mobility.

Date of questionnaire: … / … / 2014

Participating in this questionnaire is completely voluntary.

**You are being offered this opportunity because**

You are a household member in one of the randomly selected villages in the research area and your opinion is considered as relevant insight for the objectives and purposes of this research project.

An estimated number of 100 people will participate in this questionnaire process. The duration of this research project is 3 months. If you agree to participate, your involvement will last for an estimated time period of 30 minutes. Analysis made from the data collected will be used for academic purposes only and your anonymity will be guaranteed. A research report will be made available if you wish to consult it.

By signing below you agree to take part in this project.

| **Name** | **Signature** | **Date** |
|---|---|---|
| | | |