

Hand Held Wealth?

Mobile Money & Food Production in Rural Potosi



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Final Report

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Abstract:

Because the knowledge we have about the effects of mobile money platforms in the Andean region of rural Bolivia is still very limited, the purpose of this report is to detail the findings of a study about the effects of the newly introduced mobile money platform Tigo Money on the development of rural areas in the Department of Potosi. We first describe the results of 561 quantitative surveys and 68 qualitative interviews applied to respondents in two municipalities in Northern Potosi. We then analyze these findings as they relate to the research questions presented at the beginning of the study in order to figure out the role that Tigo Money plays in the financial habits of the people in rural Potosi. Finally, we pose questions for the future, and make some recommendations as to the direction that future financial policy in Bolivia should take in order to harness the potential that mobile money technologies have to improve the lives of its poorest and most isolated citizens.

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Contents

| | |
|---|----|
| 1. Introduction | 3 |
| Tigo Money operations..... | 3 |
| 2. Theoretical Background..... | 4 |
| 3. Purpose of the Research..... | 5 |
| 4. Methodology and Research Activities | 6 |
| Research Area..... | 6 |
| Unit of Analysis | 8 |
| Quantitative Methodology - Surveys..... | 8 |
| Qualitative Methodology..... | 10 |
| 5. Findings..... | 9 |
| Tigo Money usage among the population of northern Potosi..... | 11 |
| Flows and Directionality | 13 |
| Tigo Money and Social Networks | 13 |
| Why Tigo Money? General attitudes towards the service in rural Potosi | 14 |
| Tigo Money and the transformation of spending, saving and investing | 15 |
| 6. Analysis | 16 |
| Tigo Money and the implementation of new technologies for food production | 17 |
| Migration, Gender and Mobile Money | 17 |
| Marketing and the Socialization of Mobile Money in Bolivia | 20 |
| Recent changes and ways forward | 21 |
| 7. Policy Recommendations | 21 |
| 8. Conclusion | 22 |
| References Cited..... | 25 |
| Appendix A – Survey and Interviews Templates..... | 28 |
| Appendix B – Timeframe of research activities | 36 |

1. Introduction

With 10.4 million inhabitants and a population density of 9.13 inhabitants per square kilometer (INE, 2013), Bolivia is the most sparsely populated country in South America, and has been designated one of the poorest and least developed countries in Latin America. According to the United Nations' Human Development Index (HDI), the country is ranked 113th above mid-level but still lower than average for Latin America and the Caribbean (UNDP, 2014).

32% of Bolivia's population today is rural (World Bank, 2014b), and 40% of this rural population still live in extreme poverty (MEFP, 2013), defined by the World Bank as living on less than US\$1.25 per day (World Bank, 2015). Development of agricultural production in the rural areas of Bolivia is slow mainly due to inadequate infrastructure, poor natural resource management practices, limited road access, and limited access to services such as education, health, and financial services (IFAD, 2013).

Over the past decade, the administration of President Evo Morales has enacted various measures designed to increase the rural population's access to financial services, with a focus on developing the production potential of these mostly subsistence farmers (World Bank, 2012). As a result, financial access in Bolivia has increased significantly since 2005, when there were fewer than 62 deposit accounts per 1,000 people (Beck et al., 2005). The cost of delivering financial services, however, continues to place a heavy burden on the country's poorest (Ibid.), and the need for innovative financial delivery channels such as mobile banking solutions in Bolivia is obvious given that today about 60% of Bolivians over 18 in rural areas do not have a savings account at a formal financial institution (Marconi, 2014).

Tigo Money operations

Unlike the limited access to financial services experienced by the Bolivian population, the World Bank (World Bank, 2014a) states that 98 out of every 100 Bolivians do have access to cell phone service.

Perhaps this is why in January of 2013 (Telesemana, 2013) the international mobile network operator Tigo, a Millicom brand, launched a nationwide mobile banking platform called Tigo Money to allow for “financial inclusion that will allow overcoming of barriers and distance between people, especially among rural populations” (El Diario, 2013), and becoming the first service of its kind in Bolivia to attempt to bridge the gap in financial access through its 1,174 customer service points, 39% of which are located in rural areas throughout Bolivia (Tigo Money, 2015).

2. Literature Review

Much of the current theory dealing with the topic of mobile money systems in economic development was built around research conducted in Africa, particularly in its Southern region and in countries such as Kenya, Tanzania, and Rwanda (Donner, 2007; Aker & Mbiti, 2010; Hellstrom, 2010; Ravi & Tyler, 2012), where the success of M-Pesa triggered a surge of optimism about the potential benefits of mobile money, particularly when dealing with the inclusion of the unbanked into wider financial markets (Villasenor, 2013). It has been claimed that “mobile telephony and the internet have become essential tools in development,” and that “most of the next billion mobile subscribers will most likely be rural poor” (FAO, 2013:20).

Regarding the perceived benefits of the adoption of mobile money platforms in the agricultural sector, it has been argued that mobile money offers a compromise between having a formal bank account and setting up a temporary money transfer account through, for example, Western Union (Scott et al., 2004). A 2010 through 2011 study conducted in rural Nigeria (Aker et al., 2011) found that mobile money transfers made utilizing a system similar to Tigo Money’s (called Zap) were mainly used by the villagers to ensure immediate consumption needs, but also to invest in agriculture and to avoid asset depletion. Additionally, the research found that Zap households consumed a wider range of foods and have more diverse crops than those that did not use the system (Ibid.).

Yet some experts are more pessimistic about the view that ICTs can be the answer to developmental problems. Donner (2008) contends that mobile phones do have the ability to change social and economic practices in what he calls the “Fourth World¹,” but that they can only do so for those with access to the new technology, and at the expense of those that do not. Forestier et al. (2002) also found evidence that telecommunications rollout has had a significant impact in increasing inequality. But as Castells notes, this tendency toward “inequality and polarization” is “not inexorable,” but rather, it can be countered by “deliberate public policies” and conscious action (2000:375). As experts have previously highlighted, “low cost access to information infrastructure is the basic necessary condition to reach the poor” (Checchini & Scott, 2003:78), but the best way to reduce unequal access is for governments to discern true access gaps and respond with the appropriate set of interventions (ICTs for the Poor).

3. Purpose of the Research

The knowledge we have about the effects of mobile money platforms within the Andean region of rural Bolivia is still very limited. For this reason, the broad purpose of this research project was to study the effects of Tigo Money on the development of rural areas and, specifically, to answer the following central question:

What role, if any, does the adoption of the mobile money platform Tigo Money play in the productivity and implementation of new technologies for food production among the segment of the population that live in extreme poverty in the Urmiri and Chayanta Municipalities of Northern Potosí?

1

After Spanish sociologist Manuel Castell’s term for the marginalized people and regions bypassed by ICTs, and excluded from participation in production, exchange, and consumption networks that are critical in the new millennium (*The Information Age: Economy, Society, and Culture*, 1996; 1997; 1998).

Along with this question, this study also sought to answer the following sub-questions:

- What segment of the population within the research area is more likely to adopt mobile money, and why?
- Is the adoption of mobile money technology gendered in any way?
- What is the general directionality of the mobile money transfer flows in the research area: rural-urban, urban-rural, or rural-rural?
- Have mobile money transfers had any effect, either positive or negative, on social networks and interactions within members of the communities that form part of the research area?
- What is the general attitude of the populations of these two municipalities toward the adoption of the new mobile money platform Tigo Money?
- How has the introduction of a new mobile money platform transformed the general spending, saving, and investment habits of the inhabitants of Urmiri and Chayanta?

4. Methodology and Research Activities

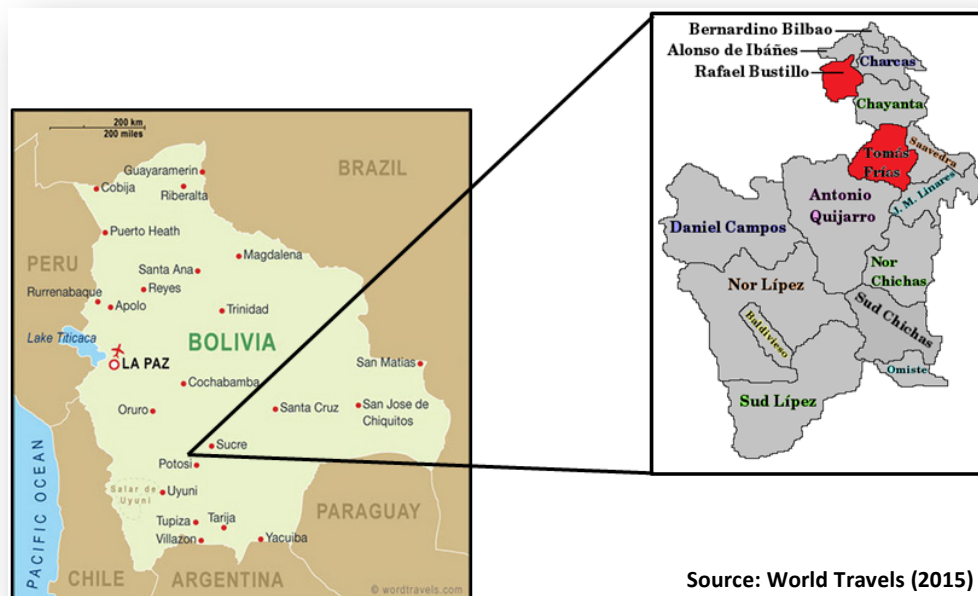
The Q2 methodological approach that combines qualitative and quantitative information gathering was chosen for this project in order to offset the potential weaknesses and limitations of either qualitative or quantitative data sets while assessing the different variables present.

Research Area

The area chosen for this research is located within the Potosi Department in the Southwestern region of Bolivia, with a population of 823,517 (INE, 2012). Even though the percentage of extreme poverty in Bolivia has gone down in recent years, Potosi's case does not reflect this trend as it continues to have the highest percentage of extreme poverty in Bolivia, estimated at 66.7% (PNUD, 2010);

furthermore, the percentage of extreme poverty in 25 out of its 38 municipalities is 75% (INE, 2006). In 2001, only the Potosi Municipality, home of the Department's capital, had an extreme poverty percentage lower than 30%, while the entire Northern region of Potosi showed percentages higher than 90% (PNUD, 2010).

Img. 4.1. Research Area



Source: World Travels (2015)

Potosi's economy depends mainly on mining activities that yield minerals such as lead, tin, and copper. In addition, the world's largest salt flat, Uyuni, is also located in the Department, from where approximately 25,000 tons of salt are extracted each year. Most of the agricultural activity in the Department is related to subsistence farming, or destined for sale at local marketplaces. Some of the most important crops are potatoes, quinoa, barley, and livestock, including llamas, sheep, and, to a lesser degree, horses and pigs (Bolivia, 2013).

This project has focused on two municipalities in the Northern region of Potosi: Urmiri, located within the Tomas Frías Province, and which has an incidence of poverty of 96.8%; and Chayanta, located

in the Rafael Bustillos Province, with an incidence of poverty of 95.2% (INE, 2005). These two municipalities were chosen because of their proximity to one or more of Tigo Money's service points located throughout Potosi. The inhabitants of the Urmiri Municipality can travel approximately 1 hour and 45 minutes by bus to Potosi City, where twenty-seven Tigo Money service points can be found. The Chayanta Municipality is located approximately 30 minutes away by bus from the two existing Tigo Money service points in the mining town of Llallagua. The languages spoken by the local population are mainly Quechua and Spanish.

Unit of Analysis

This research project has focused on individuals who are part of the economically active population (EAP) that survive on less than US\$1 per day and live in the Urmiri and Chayanta Municipalities. The minimum age of the respondents was set at 18 years. A maximum age limit for respondents was not established due to the fact that Bolivia has the highest rate of employment of older people in the region (78.3%), especially in the informal sector which includes small family businesses and agricultural work (Castro, 2014). Thus, a majority of the elderly population aged 65 and above living in the two municipalities remains economically active.

Quantitative Methodology - Surveys

In total, 561 surveys were administered in the four cantons that make up the municipality of Urmiri (Vacuyo, Belen de Urmiri, Puituco, and Cawayá), and in the nine cantons that make up the municipality of Chayanta (Chayanta, Aymaya, Amayapampa, Chiuta Cala Cala, Coataca, Irupata, Nueva Colcha, Irupata, Phanakachi, and Quila Quila). The number of surveys administered in each municipality was calculated utilizing the following formula for a simple random sample:

$$n = \frac{Z^2 p q N}{NE^2 + Z^2 p q}$$

In this formula, N represents the total population, E is the error margin, Z is the confidence interval, and p, q is the population variance. The variables utilized for the Chayanta Municipality and for the Urmiri Municipality were as follows, utilizing a 5% error margin:

Table 4.1. - Sample population formula

| Municipality | N (Population) | w | p | q | $\Sigma N^2 * p * q / w$ | $\Sigma N * p * q$ | Population Sample | Optimal |
|-----------------|-------------------|--------|-----|-----|--------------------------|--------------------|----------------------|---------|
| Chayanta | 5784 | 0.911 | 0.5 | 0.5 | 3481 | 1446 | 374 | 324 |
| Urmiri | 562 | 0.0886 | 0.5 | 0.5 | 3582 | 1405 | 234 | 223 |
| Totals | 6346 | | | | | | 608 | 547 |

Source: Authors' Elaboration based on data presented by the INE (2013)

The surveys were administered on site in both municipalities to randomly chosen individuals between the ages of 18 and 80 (maximum upper age limit established during the post-survey collection stage) of both genders. Respondents were approached in their respective communities on weekends while gathered at the marketplace, and during the week by going door-to-door and asking for their participation, usually at lunchtime and later in the day, when families come back from the fields. This data was then translated from Spanish to English and analyzed through the use of Excel.

No names were asked during the survey-taking process in order to maintain respondents' confidentiality. 223 surveys were administered in Urmiri to 61 men and 162 women, and 338 surveys were administered to 88 men and 250 women in Chayanta for a total of 561 surveys. The higher number of female respondents is due to the internal migration pattern present in these communities, which will be discussed in Sections 5 and 6.

Qualitative Methodology

The following qualitative methods were chosen for this research project due to their feasibility and capacity to yield interesting and relevant data:

Structured Interviews with Tigo Money Users

With the help of two key informants, the team gathered 29 qualitative interviewees in Urmiri and 39 in Chayanta, for a total of 68 interviews with Tigo Users: **26 men and 42 women**. These interviews were conducted and transcribed in Spanish, and were translated into English during the analysis stage. None of the interviews were digitally recorded. Rather, the respondents' answers were written down on the interview guide by the interviewers during the course of each interview.

Interviews with Key Informants

The research team conducted 4 interviews in Spanish with Tigo Money service point administrators in two locations: Potosi City and Llalagua. As with the interviews with Tigo Money users, these interviews were not digitally recorded, but rather documented in the same fashion as the others and transcribed into English during the analysis stage. Two additional interviews were conducted in Spanish with subject-matter experts Eliana Quiroz, technology and society coordinator at the office of the Vice President of Bolivia, and Alvaro Molina, mobile technologies expert at Bolivia's Universidad Catolica San Pablo. The two subject-matter experts' real names are used, as they gave their consent to have their opinions included as part of this report. The interviews with the two subject-matter experts were digitally recorded, transcribed in Spanish, and translated into English prior to the analysis stage.

The research team was unable to contact representatives from Tigo as Tigo Money's offices were located in Santa Cruz, a city that was unreachable to the team due to budgetary and time constraints. Email and phone requests made by the research team to Tigo Money representatives requesting their participation in this study went unanswered.

Participant Observation

Throughout the data-collection process, the participant observation technique allowed the research team to gain better access to the communities' networks by engaging in everyday practices. The added advantage that the team had was the key informants' knowledge of the local language, Spanish, and of the research areas and their communities.

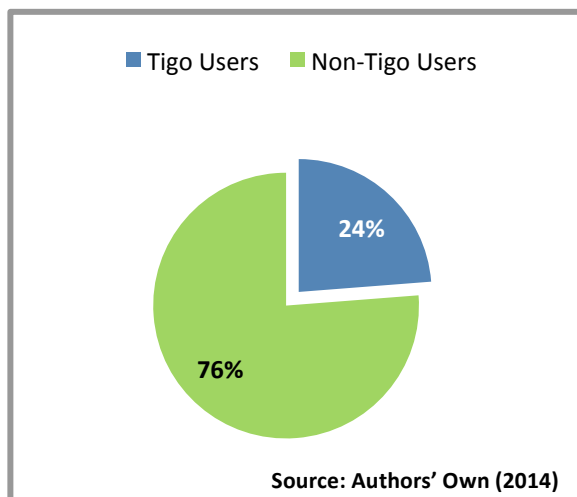
In order to gain access to the communities in the Urmiri Municipality, the team's lead researchers contacted a key informant, Rolando Cahuaya, an Urmiri-born sociologist who has extensive knowledge of this municipality, its authorities, and its population. In Chayanta, the team gained access to the communities with the help of Jorge Alvarez, a key informant who has worked with a local non-government organization in Chayanta and Llallagua for over 10 years and so is an expert in the area and its population.

5. Findings

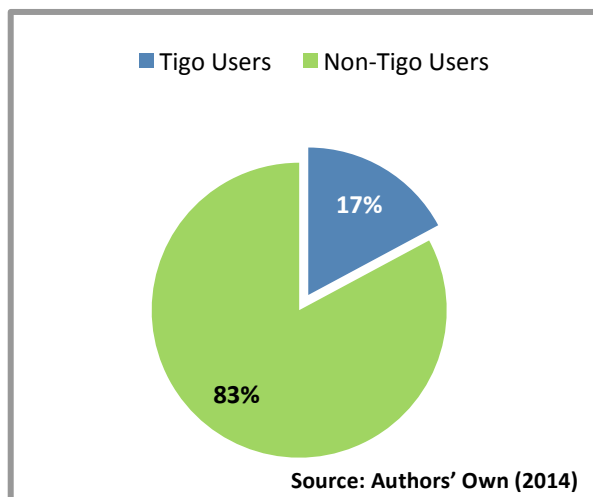
Tigo Money usage among the population of northern Potosi

The quantitative surveys found that 20% of the people living within the research area were Tigo Money users. In Urmiri, 24% of respondents said that they had used Tigo Money at some point in the past, versus 76% who said that they had never used the service (see Graph 5.1). In Chayanta, only 17% of respondents reported using Tigo Money at some point in the past, versus 83% who had never used the service(see Graph 5.2).

Graph 5.1. Tigo Money usage in the Urmiri Municipality

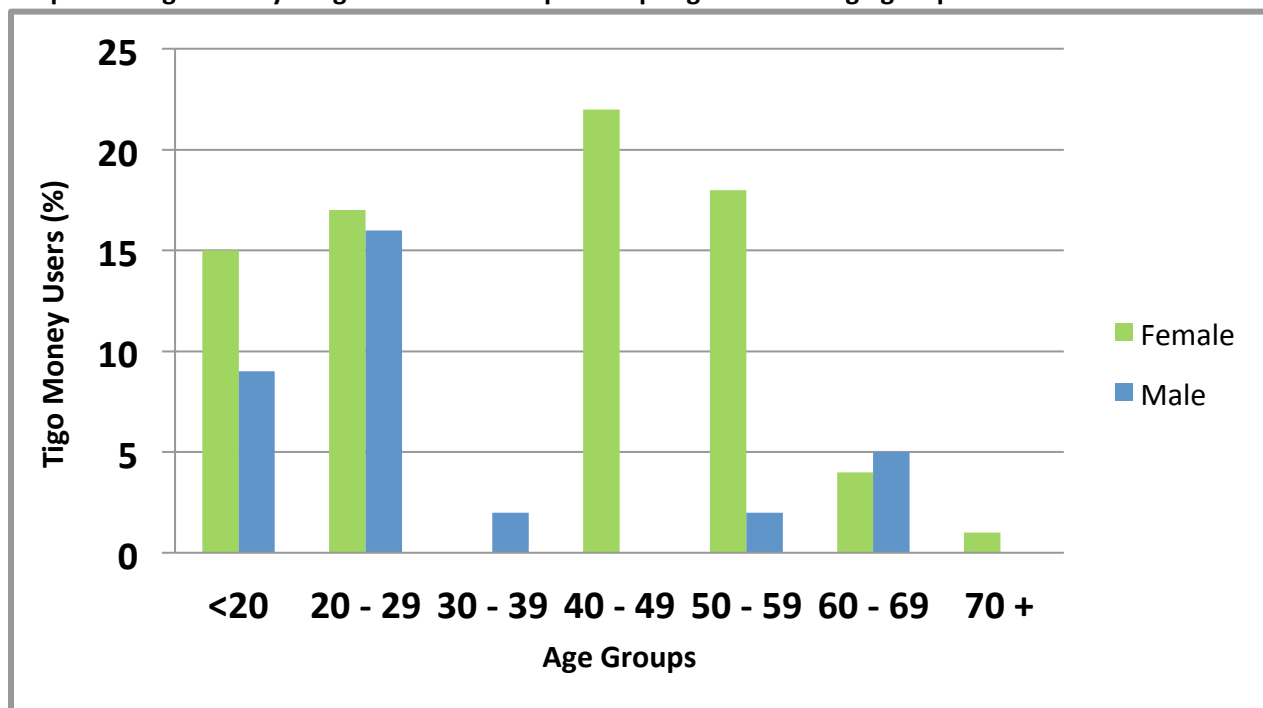


Graph 5.2. Tigo Money usage in the Chayanta Municipality



As one can see in the graph below (Graph 5.3), the segment of the population most likely to adopt Tigo Money are women (69% of users) aged 40 to 49.

Graph 5.3. Tigo Money usage in both municipalities per gender and age group



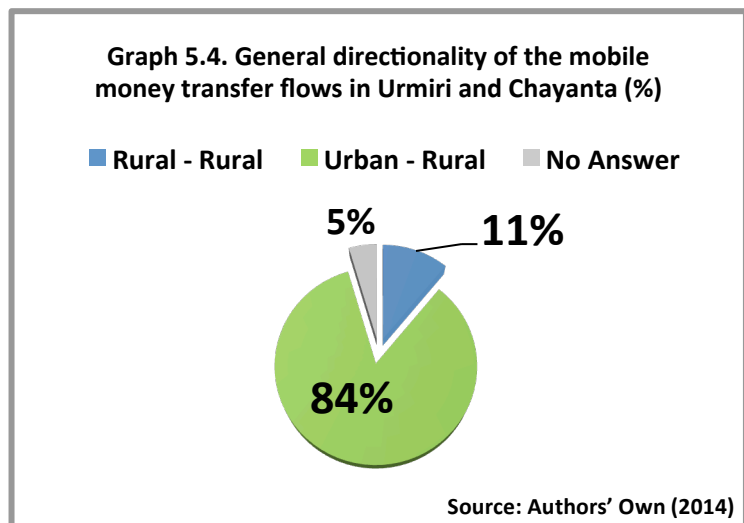
Source: Author's Own (2014)

As will be discussed later in Section 6, these data illustrate the fact that a large portion of the population between the ages of 30 and 39 migrate to key urban areas, while women over 40 are left behind caring for the children and grandchildren. It is these women that are better served by mobile technologies that can grant them to quick and safe access to remittances.

Only a small percentage of both groups (4% of all survey respondents, and 2% of Tigo Users) fit into the 30 to 39 year-old demographic, a fact that was corroborated through participant observation, as it was noted that the elderly and the very young were left behind in the communities while the population between the ages of 30 and 39 travelled to key urban areas, such as La Paz, El Alto, and Santa Cruz, and nearby mining towns such as Llagua and Huanuni, presumably looking for work.

Flows and Directionality

According to the results of the survey, Tigo Money cash flows are predominantly urban-to-rural (see Graph 5.4). The few people who reported receiving money from another rural locality cited specifically the *Chapare* region of Bolivia, famous for being the main coca-producing area in the country (UNODC 2010).



All of the respondents whom we interviewed said that they use Tigo Money only for receiving money; in fact, only one person reported utilizing the service to both send and receive money. All 68 respondents said that they received money from family members. This information was corroborated by

the Tigo Money service point operators who were interviewed, all of whom said that they almost exclusively performed money reception functions.

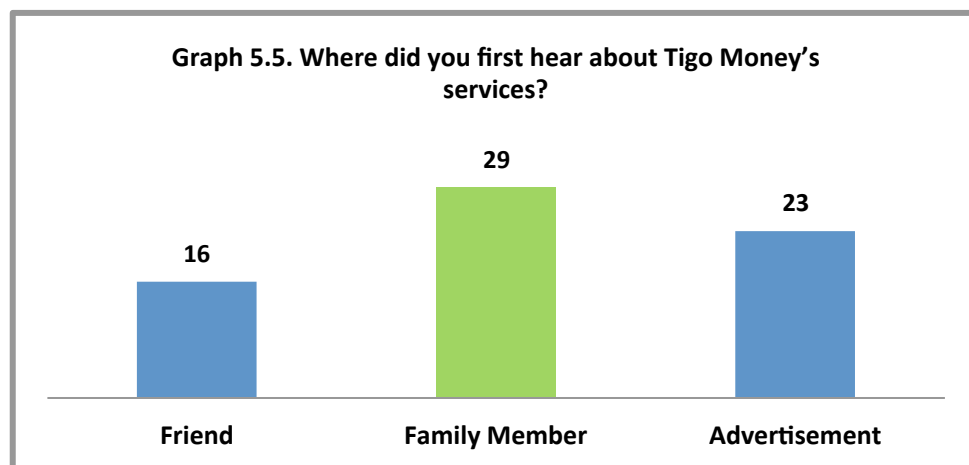
Tigo Money and Social Networks

Women in the 40 to 49 age group, those most likely to use Tigo Money, said that they first heard about Tigo Money's services from family members living in urban centers throughout Bolivia:

"My husband told me [about Tigo Money]. He's in La Paz and sends money here to Potosi... I go into the city one time per week to pick it up" (Woman, 40)

"I heard about it from my son [who is in Santa Cruz]... I can now save the money my son sends me [and] buy more things for my children" (Woman, 48)

The second most common way for interviewees overall to have found out about Tigo Money was through TV, radio, and street advertisements (see Graph 5.5).



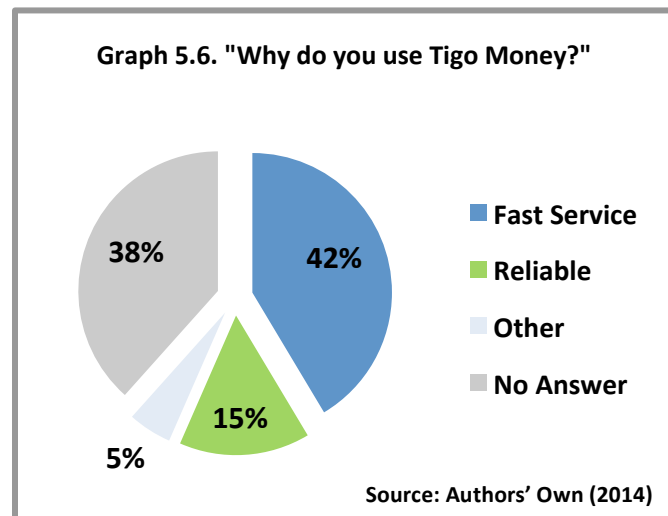
Source: Authors' Own (2014)

Why Tigo Money? General attitudes towards the service in rural Potosi

The attitude of the population in the municipalities of Chayanta and Urmiri toward Tigo Money is indifferent: People generally do not make an effort to get to know the technology, but they use Tigo Money because of their families' need to send them money from urban areas. As revealed by the

surveys, 45% of respondents who used Tigo Money said that they did so because of its speed and its reliability (see Graph 5.6). The difference between this perception and the reality of Tigo Money's efficacy versus other available alternatives is discussed at length in Section 6, "Recent Changes and Ways Forward."

During the interviews, people also said that they preferred Tigo Money because it was less formal than utilizing a banking institution. Users do not have to be affiliated with any one bank in particular, something that requires time, effort, and a lot of



paperwork. Tigo Money, on the other hand, only requires that its customers present a photo ID card, although one of the interviewees mentioned that even her young children could pick up the money for her without her being present. One Tigo Money service point attendant who works at the Potosi City service point but lives in Urmiri explained that she would often gather the money for the people in her community herself, and bring it home to distribute it accordingly at the end of every week. This woman stated that the residents of her community were grateful for this additional service she provided as she saved them a trip to Potosi City.

The majority of respondents that claimed to have never utilized Tigo Money explained that this was because they did not know what Tigo Money was (24%). Others also said that they did not have any need for the service as they did not have relatives living anywhere else that would send them money (7%), while still others explained that they brought money into the communities themselves or had someone else bring them money in person (3%). Only 0.9 % of the respondents said that they preferred

to use traditional banking services, mainly PRODEM, the bank that has the strongest presence in rural communities and throughout Bolivia (PRODEM 2015).

Tigo Money and the transformation of spending, saving and investing

The information regarding the spending, saving, and investing habits of the people in Chayanta and Urmiri was gathered through qualitative interviews. 28 out of 68 Tigo Money users interviewed indicated that their spending habits had improved since they began using Tigo Money:

“Now, with the money my father sends we buy things for the family” (Woman, 18)

“I can spend on studies for my children thanks to the money I receive” (Man, 35)

23 of the 68 Tigo Money users indicated that their saving habits had improved:

“I now save for when something really bad happens” (Woman, 49)

“I save more money for when I go to Potosi [City]” (Man, 35)

9 out of 68 respondents indicated that their level of investment had increased since they began receiving additional funds through Tigo Money, and gave concrete examples:

I invest in my crops and in food for my livestock (Man, 63)

I have invested in a new sprinkler system for the crops (Woman, 56)

I invest in my crops and in subsidized agricultural projects (Man, 18) I started buying rice, pasta and other goods to sell (Woman, 44)

Through the process of participatory observation, however, it also became clear that “investments” were not always seen as such by the interviewees, as many of them have a very narrow viewpoint on what it is to “invest.” Even though only 9 out of 68 respondents claimed to invest more since they began using Tigo Money, others did mention an increase in their savings in order to acquire new agricultural tools such as sprinkler systems, or to send their kids to college now or in the future.

“I don't invest, I only save... to buy more livestock” (Woman, 57)

“I only save... Now I have money to pay for college where I am studying to be a teacher” (Woman, 19)

6. Analysis

Tigo Money and the implementation of new technologies for food production

This research study found that Tigo Money does not yet play a central role in the implementation of new agricultural technologies. However, an important number of people interviewed, 13 out of 68, did mention an improvement and/or diversification in eating habits (6), and the increased ability to invest in sprinkler systems, green houses, and better food for the livestock (7).

Img. 6.1. Inhabitant of Chayanta, Potosi



The investments described by the interviewees can be divided into two categories: long term and short term investments. Short term investments include the reselling of products such as flour,

canned goods, sugar, pasta, and rice. This type of investment is strongly tied to Tigo Money transactions, as interviewees often talked about the fact that they would take advantage, simultaneously, of the money received through Tigo Money, and of the trip made to a Tigo Money service point often located in a commercial section of a town to purchase a wider diversity of products such as those listed above, which would then be sold to the inhabitants of the community or during weekly community fairs.

Longer term investments identified by the interviewees were closely related to a higher rate of savings, as they came with higher price tags. These types of investments included the acquisition of new agricultural technologies and other tools that could potentially lead to a higher rate and quality of agricultural output, and thus to the move beyond subsistence farming and towards the sale or trade of products with nearby communities.

Migration, Gender and Mobile Money

Img. 6.2. Women in Urmiri, Potosi



The importance of the link between mobile payments and internal migration became apparent throughout the course of this research project as most of the participants reported being introduced to new mobile money technologies by family members who had migrated to urban centers throughout Bolivia. In Bolivia, mobility and migration have always been fundamental features of its population's

dynamic. These patterns have been widely attributed to economic push factors related to the country's structural deficiencies, social and gender inequalities, and the lack of remunerative employment opportunities in rural areas coupled with more appealing labor prospects in urban centers of Bolivia, as

well as in countries abroad such as neighboring Argentina and the United States (Farah & Sanchez, 2002; IOM, 2011).

This study also corroborated the notion that elderly people and the very young are left behind in the communities while the population between the ages of 30 and 39 migrate to key urban areas. Seventy-two percent of the female survey respondents aged 65 and over declared themselves part of the economically active population with most of them (72%) engaged in food production or agricultural trades. This fact, along with the fact that females aged 40 and over are more likely to adopt the mobile money platform Tigo Money in Potosi, show an important connection between internal migration, remittances, and adoption of mobile money technologies.

Older females being left in charge of grandchildren as a consequence of migration is not a new phenomenon in Latin America, let alone Bolivia. The debate on the moral consequences of leaving children at the care of grandmothers really gained traction due to the increase in female migration that began, worldwide, in the 1980s and in Bolivia, specifically, in the 1990s (Bastia, 2009). Tigo Money's services, naturally, have become one more step in the process of sending remittances from urban to rural areas and, interestingly, it is elderly women who have overcome technological boundaries in order to become important Tigo Money customers (See Graph 4.3):

"It's mostly elderly people that use the technology [but] I have to teach them how"

(Tigo Money attendant, Potosi City)

While looking more broadly at the topic of gender, in previous studies the World Bank found that only 37% of women in developing countries have formal bank accounts, compared to 46% of men, a gap that grows even wider as a population's income level diminishes: Women who live on less than \$2 per day have a 28% less chances of opening a bank account (UNDP 2014).

This research project shows that Tigo Money is an appealing alternative to formal banking for women as it provides added benefits such as the informality of being able to have their children or even a friend pick up the funds for them. Additionally, they have increased access to cash and experience an improvement in their spending, saving and investing habits:

“I can now spend more on my family [and] I am saving to send my son to college” (Female, 53)

“I save money to go to Llallagua [where] I can buy more things at the weekly fairs” (Female, 48)

“I started buying rice, pasta and other goods to sell” (Female, 44)

All 17 female Tigo Money users aged 40 and above that were interviewed claimed that their spending habits improved since they started using Tigo Money, explaining that they now had more money to buy better and more diverse food products to feed their families. The women interviewed were very concerned with utilizing any additional funds received to improve their own lives and/or to improve the lives of their children, as they often gave an explicit destiny to their funds:

“I can now spend more on my family [and] I am saving to send my son to college” (Female, 53)

“I save money to go to Llallagua [where] I can buy more things at the weekly fairs” (Female, 48)

“I don’t know what a financial investment is [but] I am saving money to go to Argentina” (Female, 19)

Marketing and the Socialization of Mobile Money in Bolivia

87% of all Tigo Money users surveyed during this research project thought that Tigo Money’s fees were too high, with one respondent going so far as to suggest that “the government should provide this service for free” (Woman, 20). This information opened the door to new questions, mainly: Why Tigo Money and not formal banking?

Eliana Quiroz, technology and society coordinator at the office of the Vice President of Bolivia, explained that marketing plays a major role in the way that Tigo Money has been accepted by Bolivia's rural population, along with the relationships that exist between Tigo Money users and

Img. 6.3. Potosi City, Potosi



non-users, as it is through these networks that information about good or bad experiences with the service is relayed, and where the opportunity for a greater knowledge of the service is created. Tigo Money's existence is prevalent in rural communities due to its aggressive marketing campaign: signs, flyers, and advertising posters can be seen even in the most remote communities of the Altiplano region.

Recent changes and ways forward

It must be noted that during the course of this research project Law 393: Financial Services Law was put into effect in 2014, specifying that formal banking institutions in Bolivia must “enable universal access to all [their] services” (Law 393, 2013). As a consequence of this new law, formal banking institutions that are usually present in rural areas of Bolivia--PRODEM for one--must now be free to use, and must not include any additional maintenance fees. While at least one party needs a formal bank account to access the money transfer services, this can be done fairly easily by presenting proper identification. Although clients do need a minimum of US\$8 to open an account in PRODEM, they do not need to maintain a minimum balance (Banco Prodem 2015b). It is possible, at least on paper, that this

change would make PRODEM similarly convenient, if not better and perhaps cheaper than Tigo Money, as Tigo Money requires users to pay a fee for each transaction.

The new law, however, has seemingly not done much to quell the growth and popularity of Tigo Money, as it was recently awarded a prize by the Foundation for the Development of Information Technologies and Communication (FUNDETIC) in Bolivia for “creating a technology that drives financial, economic and social inclusion” in the country (El Mundo 2014). Mobile technologies expert Andres Molina is certain that formal banking services cannot compete against the trust that Tigo Money has garnered with the general public, mainly through word of mouth and marketing campaigns. As many people are still unsure of how to use the services provided by formal banking institutions, Andres says that “they opt for whatever is easiest to them, even if it ends up costing them more.”

Clearly, there is a lot of misinformation among the rural population about the new banking regulation, and about the new ease of access to formal banking institutions, something that could and should be explored further in upcoming research, along with coming up with a design and advice for how to educate the rural population, especially women, about the availability and costs of utilizing a formal banking institution.

7. Policy Recommendations

The unmet demand for financial services among the poor is reflected in the creation and the demand for alternative ways to send money. Also, the lack of adequate financial products to meet the needs of the rural population reduces its ability to save, and limits its ability to utilize earned income to invest in opportunities that may better its living conditions.

The penetration of mobile telephony in Bolivia is important given its capacity to transfer information to even the most remote locations, and the transformation of cell phones into a financial

tool through a flexible and innovative regulatory framework has great potential to increase quickly and efficiently the level of financial inclusion in Bolivia. With this in mind, the policy framework currently in place in Bolivia is already apt for fostering an enabling environment so that the poorest segments of the population may access financial services through the use of a cell phone, as the Bolivian government currently controls all aspects of the chain related to the performance of this task:

1. The government-owned telecommunications company, Entel, already provides telecommunications access to all rural areas in Bolivia
2. Banco Union, the government-owned bank, has a strong presence in rural areas of Bolivia, and is growing rapidly
3. Law 393 now provides the policy framework to allow further access at a reduced cost

In the context of public policy, the Bolivian government should consider the following as separate projects that could further engage the rural population in the use of mobile banking services:

1. Transactional services and payment systems that allow persons to receive remittances from abroad at low costs, and with greater security
2. Financial services (savings, credit, and micro-insurance) that minimize the risks and vulnerability of the population
3. Access to basic financial products such as savings and electronic payments in order to allow for further access to processed products (credit and insurance) that fit specific consumer needs

8. Conclusion

Given its exploratory nature, this research project certainly helped shed light on the advances that mobile money technologies have made in their attempts to reach the rural unbanked population in

Northern Potosi. As it now becomes clear who uses Tigo Money, why, and how its introduction is helping the local population spend, save, and invest in a better future, the next step would be determining how this knowledge can be better used to harness the willingness of the rural populations to become part of the formal economy.

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Appendix A – Survey and Interview Templates

QUESTIONNAIRE: TIGO MONEY USERS

DATE _____

LOCATION _____

NAME OF QUESTIONNAIRE-TAKER _____

Mobile Money & Food Production in Rural Potosi

Hello! My name is _____, and I would like to ask you to participate in a research project about how you save, spend and store your money. This research is being supported by the University of California in Irvine, California, in the United States of America. The research is being conducted by Isabel Balderrama. I am from UMSA'S CIDES in La Paz. [Hand subject own business card, with UC Irvine IRB address, phone and email written on the back]. You may also contact the University of California if you have any questions about this research [Show back of card].

I would like to ask you a few questions from this questionnaire about the way you utilize, or the reason why you do not utilize Tigo Money, and if this service has been useful or not in bettering your quality of life. It will not take more than 15 to 20 minutes of your time. The only risk of completing this questionnaire is the possibility that if someone else gets a copy of it, they might learn about your saving and spending habits, and how you utilize Tigo Money. But I will not collect any information that identifies you by name, and we will make sure that no one has access to this information other than me and the researchers I am working with.

Your participation in this research is totally voluntary, and you can refuse to participate if you wish. If you do not want to participate, please let me know and I will leave. You can also stop the questionnaire at any time, or refuse to answer any question as we go along.

May I also photograph or take a videotape of you? If so, may I use these images if I present my research to other people in a lecture presentation or published book or article? Please sign the following photo/video release form.

We hope that this research will help us better understand how people save, store and spend money in your community. May I ask you these questions on this questionnaire?

| YES | NO |
|-----|----|
|-----|----|

START OF SURVEY

| | | |
|---|------|--------|
| 1. Respondent's Gender | MALE | FEMALE |
| 2. Age | | |
| 3. Highest education level reached | | |
| 4. Primary Occupation | | |
| 5. Estimated monthly income | | |
| 6. Number of family members in household? | | |
| 6. Do you have a TIGO phone line? | YES | NO |
| 7. Do you use TIGO Money? | YES | NO |
| 8. Why or Why Not? | | |

If respondent answers "NO" this is the end of the survey. If he or she answers "YES" then proceed to question 8

| | | | |
|---|------|---------|------|
| 9. Do you send or receive money through TIGO Money? | SEND | RECEIVE | BOTH |
|---|------|---------|------|

If respondent answers "SEND" fill out section "A." If he or she answers "RECEIVE" then fill out section "B." If "BOTH" fill out both sections.

SECTION A

| | | | | |
|---|----------------|--|----------------|-------|
| 10. Where do you send the money? | RURAL LOCATION | | URBAN LOCATION | |
| 11. Who do you send the money to? | FAMILY MEMBER | | FRIEND | OTHER |
| 12. Occupation of the recipient | | | | |
| 13. How often do you send money? | | | | |
| 14. What use does the recipient give the money, generally? | DON'T KNOW | | | |
| 15. Amount you usually send? | | | | |

SECTION B

| | | | | |
|--|----------------|--|----------------|-------|
| 16. Where do you receive the money from? | RURAL LOCATION | | URBAN LOCATION | |
| 17. Who do you receive the money from? | FAMILY MEMBER | | FRIEND | OTHER |
| 18. Occupation of the sender | | | | |
| 19. How often do you receive money? | | | | |
| 20. What use do you generally give the money? | | | | |
| 21. Amount you usually receive? | | | | |

SECTION C

| | | | |
|--|--|-----|----|
| 22. Are you happy with the services TIGO Money provides? | | YES | NO |
| 23. Why or why not? | | | |
| 24. Are you content with the costs related to using TIGO Money? | | YES | NO |
| 25. Do you have any other comments or observations? | | | |
| | | | |

INTERVIEWS: TIGO MONEY USERS

DATE _____

LOCATION _____

NAME OF INTERVIEWER _____

Mobile Money & Food Production in Rural Potosi

Hello! My name is _____, and I would like to ask you to participate in a research project about TIGO Money usage in Rural Potosi. This research is being supported by the University of California in Irvine, California, in the United States of America. The research is being conducted by Isabel Balderrama. I am from UMSA'S CIDES in La Paz. [Hand subject own business card, with UC Irvine IRB address, phone and email written on the back]. You may also contact the University of California if you have any questions about this research [Show back of card].

I would like to ask you a few questions from this questionnaire about Tigo Money usage, It will not take more than one hours of your time, probably less.

Your participation in this research is totally voluntary, and you can refuse to participate if you wish. If you do not want to participate, please let me know and I will leave. You can also stop the questionnaire at any time, or refuse to answer any question as we go along.

May I also photograph or take a videotape of you? If so, may I use these images if I present my research to other people in a lecture presentation or published book or article? Please sign the following photo/video release form.

We hope that this research will help us better understand how people save, store and spend money in your community. May I ask you these questions on this questionnaire?

| | |
|-----|----|
| YES | NO |
|-----|----|

May I also digitally record this interview?

| | |
|-----|----|
| YES | NO |
|-----|----|

START OF INTERVIEW

SECTION A – General Information

| | | |
|------------------------------------|------|--------|
| 1. Respondent's Gender | MALE | FEMALE |
| 2. Age | | |
| 3. Highest education level reached | | |
| 4. Main occupation | | |
| 5. Estimated monthly income | | |
| 6. Marital Status | | |

SECCION B – TIGO Money Use

| |
|---|
| 7. How did you first hear about TIGO Money? |
| 8. What was the main reason you started using TIGO Money? |

| | | | |
|--|-----------|-----------|-----------------|
| 9. Did you experience any difficulties accessing the services provided by TIGO Money? | | YES | NO |
| 9a. If yes, please explain. | | | |
| 10. Since you began using TIGO Money, your <u>SPENDING</u> habits... | IMPROVED | GOT WORST | STAYED THE SAME |
| 10a. Please explain. | | | |
| 11. Since you began using TIGO Money, your <u>SAVING</u> habits... | IMPROVED | GOT WORST | STAYED THE SAME |
| 11a. Please explain. | | | |
| 12. Since you began using TIGO Money, your levels of financial <u>INVESTMENT</u> ... | INCREASED | DECREASED | NO CHANGE |
| 12a. Please explain. | | | |
| 13. Who makes the majority of financial decisions in your household? | | | |
| 14. Have you recommended TIGO Money to any of your acquaintances, friends or family members? | | YES | NO |
| 15. Do you have any final comments? | | | |

INTERVIEWS KEY INFORMANTS: TIGO MONEY EMPLOYEES

DATE _____

LOCATION _____

NAME OF INTERVIEWER _____

Mobile Money & Food Production in Rural Potosi

Hello! My name is _____, and I would like to ask you to participate in a research project about TIGO Money usage in Rural Potosi. This research is being supported by the University of California in Irvine, California, in the United States of America. The research is being conducted by Isabel Balderrama. I am from UMSA'S CIDES in La Paz. [Hand subject own business card, with UC Irvine IRB address, phone and email written on the back]. You may also contact the University of California if you have any questions about this research [Show back of card].

I would like to ask you a few questions from this questionnaire about Tigo Money usage, It will not take more than one hours of your time, probably less.

Your participation in this research is totally voluntary, and you can refuse to participate if you wish. If you do not want to participate, please let me know and I will leave. You can also stop the questionnaire at any time, or refuse to answer any question as we go along.

May I also photograph or take a videotape of you? If so, may I use these images if I present my research to other people in a lecture presentation or published book or article? Please sign the following photo/video release form.

We hope that this research will help us better understand how people save, store and spend money in your community. May I ask you these questions on this questionnaire?

| | |
|-----|----|
| YES | NO |
|-----|----|

May I also digitally record this interview?

| | |
|-----|----|
| YES | NO |
|-----|----|

START OF INTERVIEW

SECTION A – General Information

| | | |
|------------------------------------|------|--------|
| 1. Respondent's Gender | MALE | FEMALE |
| 2. Age | | |
| 3. Highest education level reached | | |
| 4. Position at TIGO Money | | |
| 5. Estimated monthly income | | |

SECTION B – QUESTIONS ABOUT TIGO MONEY USAGE

| | |
|--|--|
| 6. About how many people utilize Tigo Money? | |
| 7. How much money gets transferred per day on average? | |
| 8. Do you assist your clients by teaching them how to utilize TIGO Money's services and answering any questions they may have? | |

| | | | | |
|---|---------------|---------------|---------------|---------------|
| 9. On average, do you usually have enough cash on hand to be able to make the payments out to customers in a timely manner? | | | | |
| 10. Can you tell me of any difficulties that you are aware of that customers have run into while trying to access TIGO Money's services? | | | | |
| 11. What are the main advantages to using TIGO Money, from your point of view? | | | | |
| 12. From your point of view, are most transactions... | URBAN – URBAN | RURAL – RURAL | RURAL – URBAN | URBAN – RURAL |
| 13. Is coverage adequate in rural areas where TIGO Money is utilized? | | | YES | NO |
| 13a. If not, what, if anything, is being done to correct this situation that you are aware of? | | | | |
| 14. Has TIGO Money usage grown in the past six months? By how much? | | | | |
| 15. Do you think TIGO Money is accessible to people who are low-income earners? | | | | |
| 16. What is your opinion on the transactions costs related with the usage of TIGO Money? | | | | |
| 17. Do you think, generally speaking, that TIGO Money is easy for people to use? | | | | |
| 18. Why do you think people choose TIGO Money over other money transfer services? | | | | |
| 19. Do you have any other comments? | | | | |

INTERVIEWS KEY INFORMANTS: ACADEMIC EXPERTS

DATE _____

LOCATION _____

NAME OF INTERVIEWER _____

Mobile Money & Food Production in Rural Potosi

Hello! My name is _____, and I would like to ask you to participate in a research project about TIGO Money usage in Rural Potosi. This research is being supported by the University of California in Irvine, California, in the United States of America. The research is being conducted by Isabel Balderrama. I am from UMSA'S CIDES in La Paz. [Hand subject own business card, with UC Irvine IRB address, phone and email written on the back]. You may also contact the University of California if you have any questions about this research [Show back of card].

I would like to ask you a few questions from this questionnaire about Tigo Money usage, It will not take more than one hours of your time, probably less.

Your participation in this research is totally voluntary, and you can refuse to participate if you wish. If you do not want to participate, please let me know and I will leave. You can also stop the questionnaire at any time, or refuse to answer any question as we go along.

May I also photograph or take a videotape of you? If so, may I use these images if I present my research to other people in a lecture presentation or published book or article? Please sign the following photo/video release form.

We hope that this research will help us better understand how people save, store and spend money in your community. May I ask you these questions on this questionnaire?

| | |
|-----|----|
| YES | NO |
|-----|----|

May I also digitally record this interview?

| | |
|-----|----|
| YES | NO |
|-----|----|

START OF INTERVIEW

SECTION A – General Information

| | | |
|------------------------|------|--------|
| 1. Respondent's Gender | MALE | FEMALE |
| 2. Name | | |
| 3. Age | | |
| 4. Position | | |

SECTION B – QUESTIONS ABOUT MOBILE TECHNOLOGIES IN RURAL LATIN AMERICA AND RURAL BOLIVIA

5. In your opinion, do you think the current socioeconomic and regulatory environment is conducive to the introduction and/or expansion of new mobile money technologies?

6. What impact do issues such as marketing, user education, literacy and cultural mistrust of formal financial services have on the uptake of mobile-money services in the rural Bolivia and in Latin America in general?

7. What is your general opinion on the importance of the adoption of new mobile banking services by low-income rural populations throughout Bolivia?

8. Do you think mobile-money services have or will gain much momentum in rural Bolivia, and, if so, what could be or is the catalyst/s that can stimulate growth?

9. What is your outlook for mobile-money services in rural Bolivia? In Latin America?

11. What are the main advantages to using TIGO Money, from your point of view?

19. Do you have any other comments and/or observations?

Appendix B – Timeframe of research activities

PROCEDURES CONDUCTED

- **August 4th, 2014:** Start of the research project; Initial team meeting
- **August 22 – August 29:** First visit to research areas; Initial meetings with key informants; Pilot interviews
- **August 24 & 27:** Team meeting with key informants to assign tasks for upcoming events; Suggestions on how to improve research tools based on the results of the pilot interviews
- **September 1st:** Second visit to research area: Chayanta
- **September 2 – September 7:** Quantitative and qualitative data collection on-site
- **September 5:** Team meeting to discuss observations
- **September 7:** Third visit to research area: Urmiri
- **September 8 – September 14:** Quantitative and qualitative data collection on-site
- **September 12:** Team meeting to discuss observations
- **October 6:** Fourth visit to research area: Chayanta
- **October 7 – October 12:** Quantitative and qualitative data collection on site
- **October 10:** Team meeting to discuss observations
- **October 12:** Fifth visit to research area: Urmiri
- **October 13 – October 20:** Quantitative and qualitative data collection on site
- **October 17:** Team meeting to discuss observations
- **October 22 – November 3:** Completion of Semi-annual Technical Report
- **November 4 – November 28:** Collection of interviews with, key informants and academic experts
- **October 22 – November 30:** Data analysis; preparation medium term report
- **December 1:** Fifth official team meeting to discuss progress on final report and prepare presentation for the IMTFI Conference in Irvine, CA
- **January 1, 2015 – May 31, 2015:** Data analysis, report writing
- **June 1, 2015:** Presentation Final Report; End of project

| Activities | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Initial team meeting | | | | | | | | | | |
| Development of research tools (Surveys & Interviews) | | | | | | | | | | |
| Collection of interviews with key informants | | | | | | | | | | |
| First visit to research areas/Initial meetings with key informants; pilot interviews | | | | | | | | | | |
| Second visit to research area: Chayanta | | | | | | | | | | |
| Quantitative and qualitative data collection on-site | | | | | | | | | | |
| Third visit to research area: Urmiri | | | | | | | | | | |
| Quantitative and qualitative data collection on-site | | | | | | | | | | |
| Fourth visit to research area: Chayanta | | | | | | | | | | |
| Quantitative and qualitative data collection on-site | | | | | | | | | | |
| Fifth visit to research area: Urmiri | | | | | | | | | | |
| Quantitative and qualitative data collection on-site | | | | | | | | | | |
| Data analysis and completion of Semi-annual Technical Report | | | | | | | | | | |
| Preparation of final report and project completion | | | | | | | | | | |