ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS

Growth Challenges of Mobile Money Payment Services in Ethiopia

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Declaration

I, the undersigned, hereby declare that the work contained in this paper is my own original work and that I have not previously in its entirety or in part submitted at any university for a degree. Furthermore, all sources of materials used for the thesis had been duly acknowledged.

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Certification

This is to certify that Dawit Haile Abreha has done a study on the topic Growth Challenges of Mobile Money Payment Services in Ethiopia: A Management Perspective. This study is of his original work and all the sources of materials used for the thesis had been duly acknowledged.

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Abstract

Mobile money services are mainly used in Ethiopia for non-payment related areas such as airtime top up, cash in and cash out services. The main purpose of this study is to examine the growth challenges of mobile money-based payment services by focusing on the managerial aspects of mobile money services. The research is qualitative research and has employed a case study method. Reports from the national bank of Ethiopia, banks, and interviews were used as a source of data. Four mobile money services operated by four different banks were analyzed in this research. The result of the research shows that banks do not have a comprehensive strategy for mobile money growth, the top-level leadership attention and awareness level are very low and mobile money services are managed mixed with other services far below the sight of the top management. None of the mobile money services are profitable neither do they have an expected time period for the services to become profitable. The lack of a robust agent network and clear business model is also another finding of the study. Payment services are best understood using a platform business. An appropriate business model based on platform businesses should be designed in order to overcome the growth challenges.

Keywords: Business Model, Mobile Money, Platform,

1. Chapter One: Introduction

1.1 Background

Mobile money services were given the license to operate since the enactment of FIS/01/2012 directive by the national bank of Ethiopia in 2012. The directive prohibited non-financial institutions from engaging in the mobile money service. Following this directive, a number of banks have rolled out mobile money services. The adoption rate, measured in terms of the number of subscribers is very low as compared to other East African countries. Its usage is mainly limited to cash-in/cash-out and airtime top up services. The usage of mobile money to make payments either in online or face-to-face scenario is almost non-existent. This paper tries to examine and understand the growth challenges of mobile money payment services. It will analyze the issue from a managerial perspective. Most previous studies conducted in this area focused on the adoption of users by using standard models such as Technology Adoption Model. This study will try to look at the problem not from the user side but from the organizations themselves.

Two concepts are used in this paper to understand the mobile money payment services. The first is the platform business model concept. A platform is a business based on enabling value-creating interactions between external producers and consumers (Parker et al., 2016, 14). Unlike traditional businesses, platforms do not produce anything and don’t just distribute goods or services. What they do is directly connect different customer groups to enable transactions. eBay, a well-known company, creates value by simply connecting buyers and sellers (Reillier & Reillier, 2017, 28).

The very first platforms that scaled globally were the credit card companies such as Discover, Visa, Mastercard, and Amex (Reillier & Reillier, 2017, 28). Credit card and payment platforms are two-sided platforms. They attract users (payers) on one side and merchants on the other side. Successful payment card requires both consumer usage and merchant acceptance where both consumers and merchants' value each other's' participation (Rysman, 2009, 125). The nature of of managerial tasks such as planning, distribution, product development and related tasks of a platform business are completely different from traditional pipeline businesses. So, a conceptual framework to understand mobile payments system is through the platform business concept.

The second one is the business model canvas. A business model describes an architecture for how a firm creates and delivers value to customers and the mechanisms employed to capture a share of that value (J.Teece, 2018). A comprehensive list of the business model components is provided by (Osterwalder & Pigneur, 2010). The lists in the component show how managers should address the business model development part.

Business model for a platform business is completely different from a pipeline business. In a traditional business the customers are one side and the company is on the other side. In platforms, the customers are located in two different sides and the company is located at the center.

The National Bank of Ethiopia enacted a mobile and agent banking regulation in 2012 allowing financial institutions (mainly banks and Microfinance Institutions) to provide mobile and agent banking services. The main purpose of the regulation was to promote the use of technology and innovative financial service delivery channels such as mobile devices and agents in deepening financial service access to the wider section of the population at an affordable price (National Bank of Ethiopia, 2012).

The agent banking service commonly called mobile money or mobile wallet service is now becoming a global phenomenon recording astonishing growth in emerging markets. The global mobile money deployments now has more than 1 billion subscribers who transact more than $2 billion in value on a daily basis and generate more than $2.4 billion in annual revenue for mobile money service providers (GSMA, 2019). The payments landscape in emerging markets is significantly changed by mobile money services (GSMA, 2018). In East Africa, there are close to 249 million subscribers, out of which 102 million (40.97%) are active users (GSMA, 2019). In our country Ethiopia, according to the data obtained from National Bank of Ethiopia for 2019 and 2020 the number of subscribers is summarized below:

Mobile money Subscribers					
Year	**status**		**Gender Distribution**		
	Active	Non-Active	Male	Female	total
June,19	1,885,977	1,713,080	1,203,416	589,652	3,599,057
June,20	4,200,788	3,756,749	2,220,317	974,316	7,957,679

Table 1: Mobile Money Subscribers Data from National Bank of Ethiopia

As can be seen from the table above in Ethiopia, in 2019 there were 3,599,057 mobile wallet subscribers out of which 1,885, 977 (52.4%) are active subscribers. Compared to the East African average active user rate of 40.7% the rate in our country is performing well.

Tough the number of subscribers in Ethiopia is very small compared to East African countries even MPESA, the growth of subscribers have been good. By June 2020 the mobile money subscribers in Ethiopia have reached 7,957,679 million, almost doubling from the previous June 2019, which was 3,599,057. Data obtained from four mobile money operators show that the growth in mobile money subscribers is very impressive.

Figure 1: CBE birr subscribers' growth

Since its launch in 2017 CBE birr, mobile money service provided by Commercial Bank of Ethiopia, subscribers have been growing at an annual average growth rate of 695%. Wegagen HelloCash service, a mobile money service provided by Wegagen in partnership with Belcash Technologies, has been growing its subscribers on annual average growth rate of 73%.

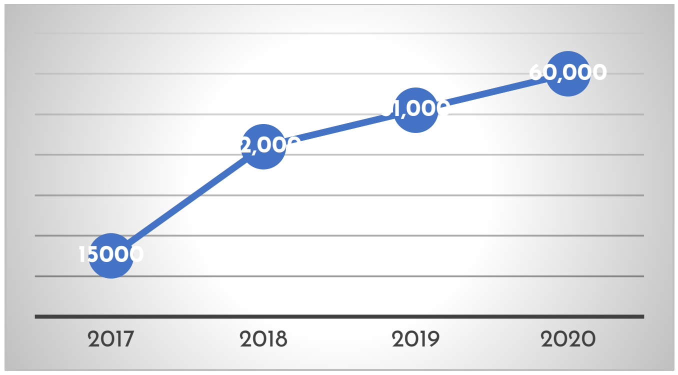

Figure 2: Wegagen HelloCash subscriber growth

Figure 3: Amole subscriber growth

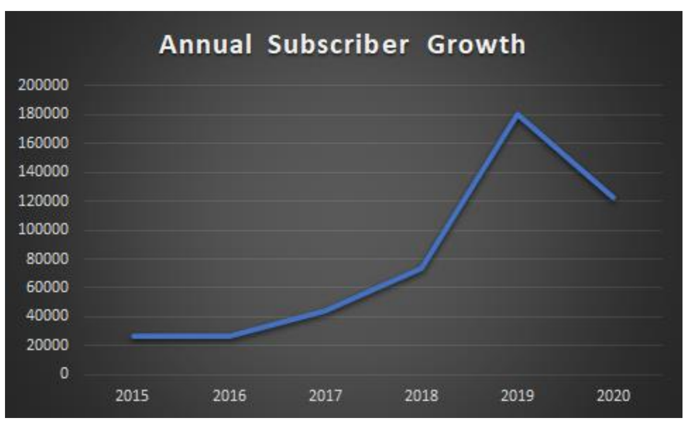

Figure 4: Anbessa HelloCash annual subscriber growth

Amole, a mobile money system provided by Dashen Bank, subscribers have been growing at an average annual rate of 140%, while Anbessa HelloCash, has seen a negative growth in subscribers in the year 2020.

Though there has been progress in increasing the subscriber base the percentage of inactive subscribers is still large. But the overall percentage of inactive subscribers has remained around 47% (National Bank of Ethiopia, 2020). Inactive subscribers are those who do not perform transactions for more than 90 days. This means the impressive growth shown in customer subscriptions could not be replicated in user engagement.

Another usual industry metrics used to measure performance of mobile money services is annual transaction value and volume. Transaction volume measures the number of transactions conducted, while the transaction value measures the total value usually in Birr that was transacted through the mobile money service.

Data obtained from the banks shows the transaction volume and value for of their mobile money services has been showing a steady growth.

Year	**Transaction Volume**	**Transaction Value**	**Annual Transaction volume Growth**	**Annual Transaction Value Growth**
2017	20,464,127	2,207,266,453		
2018	11,687,690	875,512,096	-0.42887	-0.60335
2019	4,954,150	2,869,187,196	1.13508	2.277153
2020	39,636,243	3,774,593,621	0.588363	0.315562
		Average Annual Growth	**43%**	**66%**

Table 2: CBE birr transaction value and volume data

As can be seen from the table above the average annual transaction volume growth has been 43% while the average annual transaction value growth has been 66%. With the exception of the year 2018 which is one year after its launch CBE birr has been showing a positive growth in transaction volume and value.

Year	Transaction Volume	Transaction Value	Annual Transaction Volume Growth	Annual Transaction Value Growth
2018	75,908	15,443,895		
2019	522,293	125,695,404	588%	714%
2020	141,381	66,366,586	-73%	-47%
Average Annual Growth			258%	333%

Table 3: Amole transaction value and volume data

Amole has seen average annual transaction volume growth of 258% and average annual transaction value growth of 333%. But the mobile money service has seen a negative growth in the year 2020.

Year	Transaction Volume	Transaction Value	Annual Transaction Volume Growth	Annual Transaction Value Growth
2017	115,000	12,115,000		
2018	524,000	43,000,000	356%	255%
2019	1,060,000	145,000,000	102%	237%
2020	1,223,000	185,800,000	15%	28%
Average Annual Growth			158%	173%

Table 4: Wegagen HelloCash Transaction Value and Volume Data

As can be seen from the table above Wegagen Bank's HelloCash mobile service has registered a positive growth in transaction volume and value since its launch. The mobile money service has seen an annual transaction volume growth of 158% and annual transaction value growth of 173%.

Year	Transaction Volume	Transaction Value	Annual Transaction Volume Growth	Annual Transaction Value Growth
2015	5539	6,840,074.06		
2016	73478	38,230,301.59	1227%	459%
2017	464546	71,311,585.05	532%	87%
2018	806013	157,385,609.31	74%	121%
2019	1500434	304,372,684.00	86%	93%
2020	5687788	1,015,597,457.07	279%	234%
Average Annual Growth Rate			**440%**	**199%**

Table 5: Anbessa HelloCash Transaction Volume and Value data

Anbessa Bank's HelloCash mobile money service has also seen a positive growth since its launch. The mobile money service has seen an average annual transaction volume growth of 440% and average annual transaction value growth of 199%.

In Ethiopia, nationally the transactions value and volume processed by all mobile money services for the year 2019 and 2020 is summarized in the table below.

	Mobile Wallet	
Fiscal Year	Volume	Value
June,19	1,675,254	850,181,186.53
June,20	4,241,512.00	2,962,340,989.10

Table 6: Total wallet-based transactions volume and value from the National Bank of Ethiopia

One of the areas in the world where the success of mobile money has been observed is East Africa, In East Africa, the total the 2019 annual transaction volume is close to 17.1 billion and these transactions generated a total transaction value of $293.4 billion (GSMA, 2019). One of the leading mobile money services in East Africa MPESA processed 11 billion transactions in the year 2019 (Statista, 2021).

In June 2019, more than 1.5 million transactions were processed by all mobile money services. When we compare it with MPESA, with the 11 billion transactions MPESA has processed within the same period it shows that the usage of mobile money in our country is very low. In East Africa more than $293 billion value was transacted while in Ethiopia its just a small number of 3 billion birr. This shows us that when compared to the performance of the wider Easter Africa Region the performance of the mobile money (wallet) usage and adoption in Ethiopia is very low. According to the study conducted by (Research and Markets, 2019) the mobile payment industry in Ethiopia is expected to reach $7,818.2 million by the year 2025. As (Naghavi, 2019) described though mobile money services started as money transfer services the trend now is towards payment's services.

1.2 Problem statement

A general data on subscribers and transaction volume and value does not show the entire picture. Analyzing the data of each service provided by mobile money deployments will shine more light. In Ethiopia, the mobile money services provide Airtime top-up, Cash-in/Cash-out, bill payment, ticket sales and merchant payment services. In order to understand the most popular or widely used mobile money service, categorizing transaction volume data for each service type is necessary.

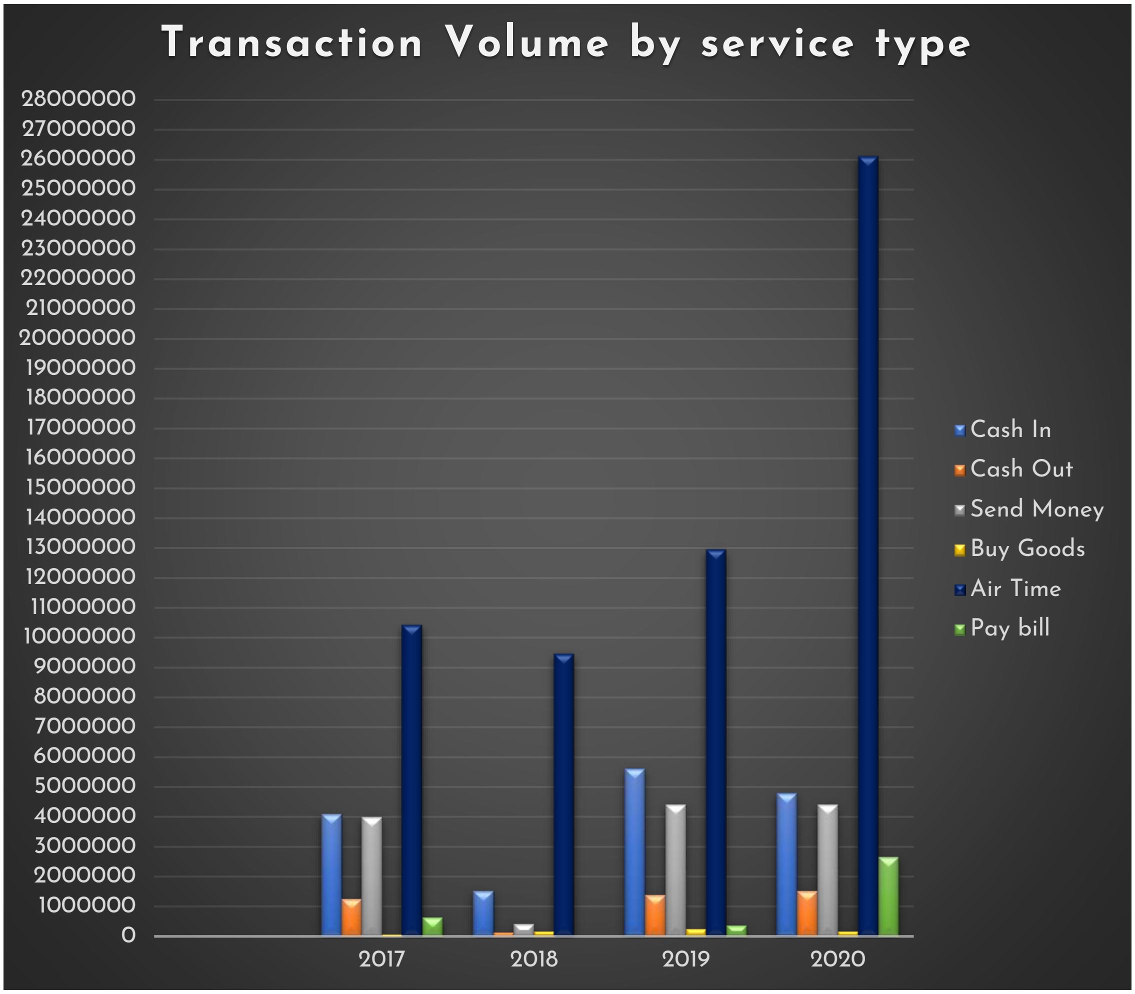

Figure 5: CBE birr 2020 transaction volume by service type

Year	Cash In	Cash Out	Send Money	Buy Goods	Air Time	Pay bill
2017	829,329,228.05	647,395,271.95	357,275,256.62	17,017,491.95	231,290,482.69	124,958,722.20
2018	390,718,859.83	182,804,673.44	80,159,369.94	41,705,919.49	180,028,039.68	95,233.76
2019	1,220,048,087.88	830,199,945.39	37,434,626.56	58,723,411.44	278,811,412.83	43,969,712.14
2020	1,155,114,526.92	938,732,891.41	478,989,498.67	22,885,033.17	617,986,107.9	560,885,563.1

Table 7: CBE birr transaction volume by service type data

As can be seen from the above figure, airtime top-up is the most frequently used transaction type, followed by Cash In and Send money. This means people use it frequently to top up their mobile Airtime, refund their CBE birr account, and send money to beneficiaries.

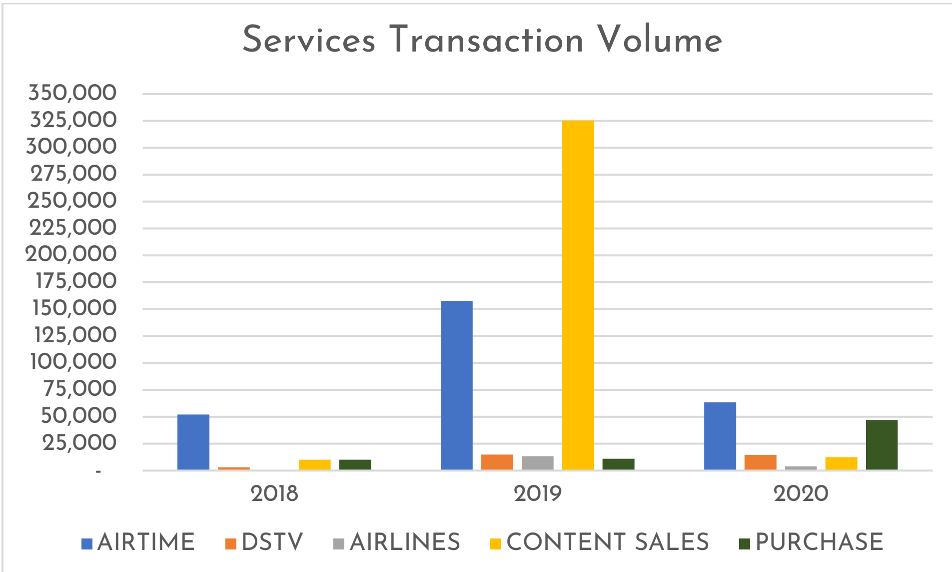

Figure 6: Dashen's Amole 2020 transaction volume by service type data

YEAR	AIRTIME	DSTV	AIRLINES	CONTENT SALES	PURCHASE
2018	51,967	3,052	670	10,001	10,218
2019	157,375	14,898	13,438	325,516	11,066
2020	63,518	14,516	3,851	12,455	47,041

Table 8: Amole Transaction volume by service type data

The most popular service, as can be seen from the transaction volume categorized per service type, is not Airtime. The sale of digital content, such as music from Awtar (a digital music store) and payment for different services have high large transaction volumes.

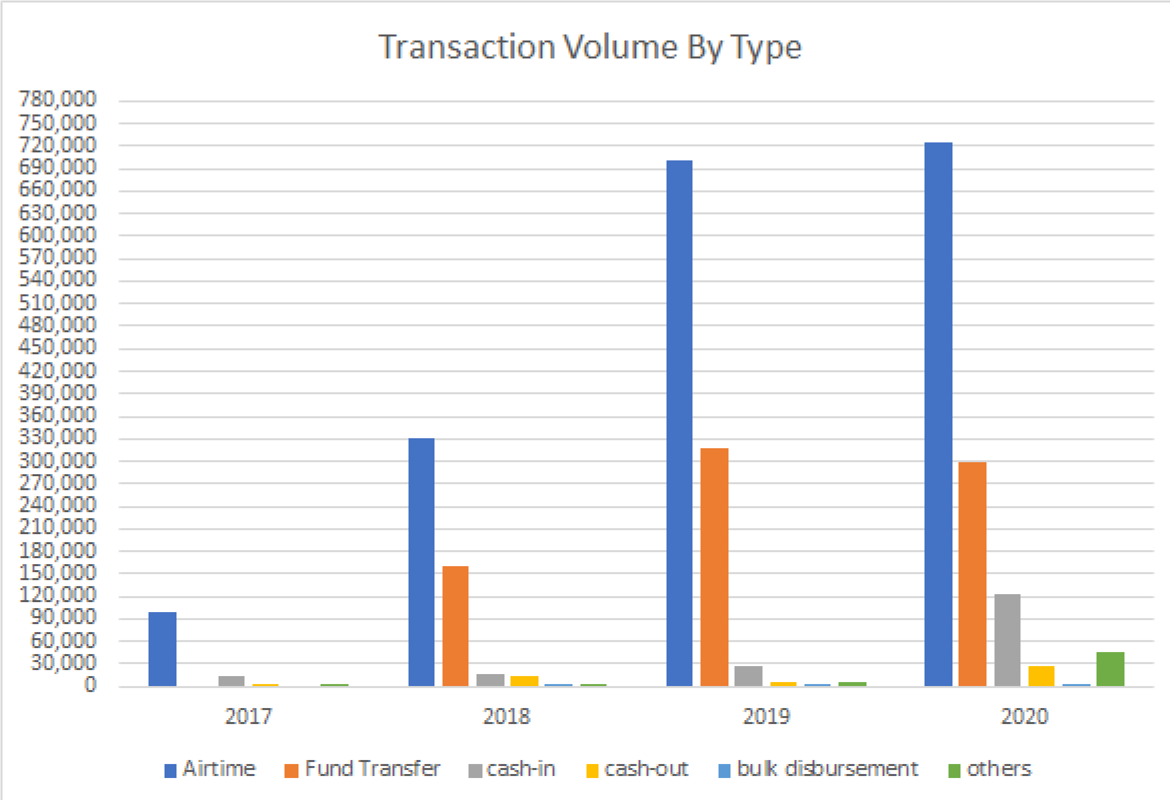

Figure 7: Wegagen HelloCash 2020 transaction volume by service type data

Year	Airtime	Fund Transfer	cash-in	cash-out	bulk disbursement	others
2017	100,000	-	13,000	600	-	1,400
2018	330,000	161,000	16,000	15,000	500	1,000
2019	700,000	318,000	27,000	5,300	3,200	6,500
2020	724,000	300,000	122,000	26,000	4,300	46700

Table 9: Wegagen HelloCash Transaction Volume By service type data

In Wegagen Bank's case the service that is utilizing the highest value of mobile money is fund transfer followed by Cash-out, airtime top-up, and cash-in services.

In all three cases the data shows that Airtime top-up and other non-payment related services are most frequently used by users. The exception is Amole, where its most frequently used service is content sales not airtime top-up. The content sales in Amole are mainly sales of digital content such as music sold on Awtar, a digital music store. But still, in Dashen Bank's case, Airtime top up is the second most used service by subscribers.

The data clearly shows the usage of mobile money for payment services both in an online and face-to-face scenario is very limited. This paper tries to analyze why mobile money deployments were not used for payments services from a managerial or organizational perspective. Most studies have been focused on the factors that limited the adoption of users.

1.3 Objective

The main objective of this research is to analyze the managerial or organizational problems that limit the growth of mobile money-based payment systems.

The following are the specific objectives

- To examine the strategy (marketing and pricing) that mobile money service provider put in place to overcome payment growth challenges
- To investigate management awareness and support given to mobile money
- To examine the organizational structure put in place to manage mobile money
- To investigate the agent management strategy of the mobile money service providers
- To compare the practices followed by the different mobile money service providers among one another.
- To investigate the way the mobile money IT infrastructure is put in place and managed

1.3 Research Questions

Ethiopia introduced mobile and agent banking directive in 2012 but after eight years the adoption of mobile money for payment services is still very low. This main objective of this research is to understand why mobile money deployments are not being used for electronic payment services.

- How an appropriate and comprehensive strategy that deals with customer adoption, merchant on boarding, marketing and pricing is designed and implemented?
- How much is the level of awareness of the management with regards to mobile money? Are mobile money's well-resourced and supported by management?
- Under what kind of structure are mobile money services being managed? Does the structure fit for the mobile money payment services?
- How are agents being managed? What are the problems associated with agent management?
- What are the similarities and differences that exist among the different mobile money operators in terms of strategy, organizational structure, agent management, technology, revenue model?
- How is the technological infrastructure being managed?

1.4 Significance of the study

Most research (Nebiyu, 2017) (Gezahegn, 2016) (Haile, 2018) (Yetnayet, 2019) (Tesfaye, 2018) conducted in this area focused on adoption of mobile banking solutions by using Technology Adoption models and theories. These theories and models mainly focus on factors affecting the adoption of technologies from user's perspective. Other researches focused on using technology to improve financial inclusion. But growth challenges of mobile money-based payments from an organizational perspective have not been systematically analyzed yet. This study aims to answer a question that has not been investigated or systematically analyzed in Ethiopia so far. So, by filling the gap the study will add to the body of knowledge on mobile money based financial services in Ethiopia.

In addition, they will provide useful practical insights to mobile money operators. Those who are new to the market and those with an established system can benefit from the findings of this research. They will get practical insights into how to overcome the growth challenge of a mobile money system.

1.5 Scope of the study

The mobile money payment ecosystem involves many actors. It includes regulatory bodies such as the National Bank of Ethiopia, technology companies, banks, users, merchants and telecom companies. But the this study is only limited to banks that are licensed to provide mobile money services. It also is mainly focused on the organizational/managerial aspects of the banks.

Technical and regulatory issues of mobile money deployments are not included in this study.

1.6 Limitations of the study

This is a qualitative research. So, the impact of some issues on the overall growth of mobile money payment systems were not measured precisely. In addition, such kind of research methods might be subjected to a bias by the researcher.

The time given to analyze all four cases was limited. This limits the capability to analyze and understand each case in depth.

1.7 Definition of terms

Airtime Top-up: purchase of airtime via mobile money, funded from a mobile money account.

Cash-in: the process by which a customer credits their mobile account with cash. This is usually via an agent who takes the cash and credits customer's mobile money account with the same amount of e-money.

Cash-Out: The process by which a customer deducts cash from their mobile money account. This is usually via an agent who gives the customer cash in exchange for a transfer of e-money from the customer's mobile money account

Merchant Payment: A payment made from mobile money account via a mobile money platform to a retail or online merchant in exchange for goods and services

Mobile Money: also known as electronic money is stored value held in the accounts of users, agents and the provider of the mobile money service. Typically, the total value of e-money is mirrored in (a) bank account(s), such that even if the provider of the mobile money service were to fail, users could recover 100 per cent of the value stored in their accounts. That said, bank deposits can earn interest, while e-money traditionally cannot.

2. Chapter Two: Literature review

2.1 Mobile Money Ecosystem (conceptual framework)

Mobile money can be defined, at its basic level, as the provision of financial services in mobile devices (Donovan, 2012). Mobile money service providers (banks), regulators, third party institutions and users are all included in the mobile money ecosystem (GSMA, 2015). The following diagram adopted from (Tobbin, 2011) shows the different actors in the mobile money ecosystem.

Figure 8: Mobile Money Ecosystem

2.1.1 National Bank of Ethiopia (regulator)

National bank of Ethiopia lays down the regulatory framework that is required for the mobile money to operate. Licensing requirements, customer protection, fraud and money laundry protections, and other governance aspects of mobile money services are defined through the directives issued by the national bank of Ethiopia. The National Bank of Ethiopia issued its first directive no. FIS/01/2012 that only allowed financial institutions to operate mobile money services, recently enacted regulation called “Licensing and Authorization of Payment Instrument Issuers Directive No. ONPS/01l2020” has allowed non-financial institutions to engage in mobile money services. The activities of the regulators cover all parts of the ecosystem.

2.1.2 Banks (mobile money operators)

Banks are the ones with the experience in providing deposit, loan, payment and other financial services to their customers. They are the institutions trusted by people with their money. In addition, to their traditional line of business banks were the only one allowed to issue mobile money in exchange for cash deposits. They were the only institution allowed to establish their own agent network. Even if the new directive allowed non-bank actors to issue mobile money the actual deposit of user cash will be handled by banks through their trust accounts. So, banks have a crucial role in the mobile money ecosystem.

2.1.3 Merchants

Merchants are the ones that provide service to their customers. The services that are sold to customers can be physical goods or intangible ones. Merchants can be private or governmental institutions. Merchants receive payment from customers in exchange for the service delivered. Payments can happen in face-to-face or online scenarios. Recently the use of Quick Response (QR) codes in facilitating face-to-face merchant payments is being adopted widely (Nautiyal, 2020).

2.1.4 Users

Users are subscribers that create a mobile money account and exchange cash for an equivalent amount of mobile money. The success of mobile money ecosystem greatly depends on the behavior and usage patter of users (Tobbin, 2011).

2.1.5 Agents

Agents are the distribution channel, and are the primary point of contact for users. On behalf of banks (mobile money service provider) they perform various activities such as cash-in, cash-out, customer registration and money transfer. A robust agent network that can build brand awareness, educate customers, meet liquidity demands is critical for the success of a mobile money deployment. A robust agent network is an indispensable tool in building confidence among users in a service that has low awareness. A poorly managed agent network results in poor customer experience and which in turn erodes trust and drives the business away. The agent network remains a key asset of mobile money providers (GSMA, 2019).

2.1.6 Telecom operators

Mobile money service use mobile networks to function. The coverage and quality of the mobile network provided by telecom operators is very crucial for the success of mobile money services. recently, in addition to the provision of mobile networks the telecom operator has started its own mobile money service dubbed, Telebirr, which allows it to directly compete with banks.

2.1.7 Tech companies

Technology (tech) companies such as e-commerce companies and others who facilitate the sale of physical and digital content are important for the adoption of mobile money services. in addition, these companies can also engage in payment the provision of payment gateway services allowing the transfer of fund from one mobile service provider to another.

2.2 Mobile Money Payment Systems

Payment systems are indispensable to our lives as individuals and to the smooth functioning of the economy. They allow money to fulfill its role of accepted means of exchange when purchasing goods or services (Rambure & Nacamuli, 2008, 3). A payment system consists of a set of instruments, banking procedures, and, typically, interbank funds transfer systems that ensure the circulation of money (Committee on Payment and Settlement Systems, 2003).

The key to any payment system is the payment instrument. A payment instrument is an instrument enabling the holder/user to transfer funds (Committee on Payment and Settlement Systems, 2003). Cash is a well-known payment instrument that has been in use for a long period of time. But payment instruments can also be electronic ones. Cards, credit transfers, direct debits, and e-money (mobile money) are non-cash payment instruments with which end users of payment systems transfer funds between accounts at banks or other financial institutions (European Central Bank, 2020).

Cards are used widely in the developed world to make payments. VISA and MasterCard are among the well-known card schemes used widely. But recently mobile money is being used increasingly across the globe especially in the developing world. The use of mobile money is now becoming a global phenomenon recording astonishing growth in emerging markets. Globally, the mobile money industry has now more than a billion registered accounts and close to $2 billion value transactions are processed daily (GSMA, 2019). 60%

of mobile money service providers are now becoming commercially sustainable by earning positive EBITDA (GSMA, 2019). In the early years, mobile money providers often invest six to eight times the revenue units generated by mobile money (ALMAZÁN & VONTHRON, 2014). They may even incur heavy initial losses and invest in the system until sufficient value is flowing through their systems to break even, roughly three years (GSMA, 2019). For the first time in 2019, digital transactions accounted for the majority of mobile money flows. This is a result of the gradual shift from cash to digital payments (GSMA, 2019). Another trend observed in the mobile money industry is the emergence of "**payments as a platform model**" (GSMA, 2019).

2.2 Understanding Mobile Payments as platforms

Understanding the platform business model is crucial to understand the new **payments as platform model** observed in the mobile money industry. A platform is a business based on enabling value-creating interactions between external producers and consumers (Parker et al., 2016, 14). Companies such as Amazon, eBay, VISA, Mastercard, Uber, and many other similar companies have one thing in common: all of them are examples of two-sided markets or platforms. Unlike traditional businesses, platforms do not produce anything and don't just distribute goods or services. What they do is directly connect different customer groups to enable transactions. eBay, a well-known company, creates value by simply connecting buyers and sellers (Reillier & Reillier, 2017, 28). Another typical platform business is Amazon in 1999 Jeff Bezos, President, and CEO of Amazon.com, said "***Ultimately we're an information broker. On the left side, we have lots of products; on the right side, we have lots of customers. We're in the middle of making the connections.***

The consequence is that we have two sets of customers: consumers looking for books and publishers looking for consumers. Readers find books or books find readers."

Platforms have been instrumental in the economic growth of both start-ups and larger companies, which rely on them to provide services online. Widespread mobile access and easy distribution via mobile apps have driven consumers' adoption of platforms (Naghavi, 2019). The following diagram from (Erol & Jan, 2014) show how a digital payment platform facilitates interaction/transaction between payer and payee

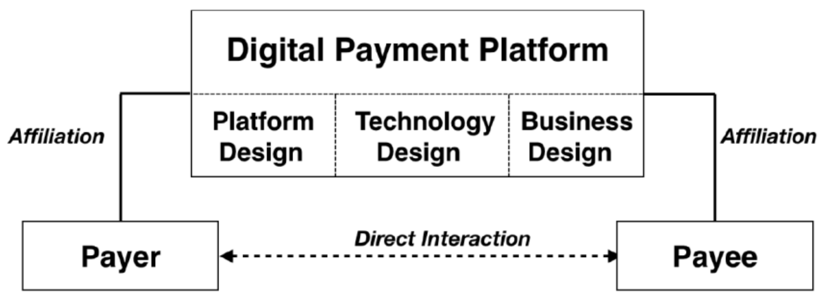

Figure 9: Digital Payment Platform Model

The power of platform business models has grown as our economies become increasingly digital, but how companies address the challenge of platform growth to achieve a critical mass of users remains unclear (Jocevskia et al., 2020, 1). Challenges faced by platforms are different from challenges faced by traditional businesses. Traditional businesses convert the input into output and deliver the end result to customers. Speed and efficiency are critical in traditional businesses. In order to be a successful platform, business has to attract both sides of the market. For example, a credit card company has to attract users that will use the card to make payments, and merchants, who are willing to accept payments using the card. Successful payment card requires both consumer usage and merchant acceptance where both consumers and merchants' value each other's participation

(Rysman, 2009, 125). But this creates a classic chicken-and-egg problem. Without sellers who are willing to accept the new form of payment, buyers won't adopt it. But if buyers do not adopt the new form of payment, sellers won't invest time, effort, and money accepting it. So, how do you launch a new payments platform from a base of zero, starting with neither sellers nor buyers – when neither group has a reason to join until the other side joins first? (Parker et al., 2016, 81). Both buyers and sellers need to adopt the same exchange mechanism, almost simultaneously. The staging that is possible in some platforms – attracting one side first and then the other – does not work in the case of payment mechanisms (Choudary, 2015, 77).

Understanding the nature of two-sided markets is very important in order to analyze the challenges that are faced by platforms in their growth. There are many reasons why some platforms are successful and others are not. The major focus of the economic research on two-sided markets has been to address how the platform sets prices for both sides of the market simultaneously (Rysman, 2009, 141). To capture the advantages that platforms promise, getting pricing right, which is "subsidize" one user group while charging the other a premium for access to the subsidized group (Eisenmann et al., 2006). Other researchers focus on other issues. (Rysman, 2009, 129) argued that the two most important strategies that a potential platform firm chooses are price and openness. But innovation, advertising, and quality investment are also other dimensions in a two-sided market (Rysman, 2009, 135). Central to the success of digital platforms are the number and variety of partnerships they enable, which help to build a diverse and engaged user base (Naghavi, 2019).

Mobile money services as platforms face adoption challenges and in order to overcome these challenges, innovative business models are crucial to ensuring that the mobile money industry can continue to serve customers sustainably (Naghavi, 2019). Today, the key question is how should the mobile money business model evolve to increase the relevance of mobile money accounts and meet the changing needs of individuals and small businesses? Transitioning towards a "payments as a platform" approach that connects consumers with third-party services across a range of industries is at the heart of this evolution (Naghavi, 2019). The payments as a platform approach is not only about incorporating more partners and third parties into the platform. It is about deepening the engagement with individuals and businesses by offering a frictionless end-to-end experience (Naghavi, 2019).

(Naghavi, 2019) identified four core attributes of a mobile money platform:

- **Multi-sided model:** Platforms rely on an ecosystem of partners to serve end users. They do this by connecting producers (supply side) to users (demand side) through, for example, a digital interface and mutually agreed rules that enable parties on both sides of the platform to interact efficiently and with trust.
- **Built upon numerous partnerships with producers on the supply side:** For many digital platform players, the number and variety of partnerships have been integral to their success.
- **Providing access to mass user base on the demand side:** Network effects allow platforms to recruit massive populations of users when new services are launched. In South Korea, Kakao Bank, led by Kakao Corp., leveraged the reach of messaging app KakaoTalk's 42 million users to sign up one million banking clients within the first five days of launch.

- **Efficiently matching supply and demand side using data analytics:** Data and intelligence are pivotal for platforms, and valuable insights from existing activities pave the way for the ecosystem to expand. Most platforms use data analytics to better understand users' needs, which allows them to (a) reduce the risks of offering unprofitable services; (b) increase existing revenue sources by maximising sales; and (c) add additional revenue streams by offering suitable new services and products to users. This also creates a more customised, personal experience for their customers.

To make the shift, providers should build on their strengths and unique assets. Although mobile money providers already possess the necessary skills and resources to transition to a platform-based model, there are several organizational and technological challenges to overcome (Naghavi, 2019). According to (Naghavi, 2019) these organizational challenges are classified into five pillars: Establish plug-and-play access to mobile money system; manage organizational change and new business models; optimize user experience (UX) and user interface (UI); enable third parties to develop new relationships via the front end, and adopt a personalized approach to product design.

The "payments as a platform" approach will also reduce mobile money providers' dependency on revenues stemming from customer fees. This transition will enable them to transform their revenue model and expand their value proposition to new products and adjacent revenue streams to ensure their business remains sustainable in an increasingly competitive landscape (Naghavi, 2019).

For mobile money providers providing plug-and-play, access will completely transform their service by significantly reducing the time it takes to link with partners and significantly increasing the range of services available to customers (Naghavi, 2019).

2.3 Business Model Canvas

A business model describes an architecture for how a firm creates and delivers value to customers and the mechanisms employed to capture a share of that value. It's a matched set of elements encompassing the flows of costs, revenues, and profits (J.Teece, 2018). The business model provides a pathway by which technological innovation and knowhow combined with the utilization of tangible and intangible assets are converted into a stream of profits (Teece, 1986, Teece, 2006). A comprehensive list of the business model components is provided by (Osterwalder & Pigneur, 2010) contains the following categories:

- **Value Proposition:** the product or service the firm intends to offer to its customers to meet their needs.
- **Infrastructure:** the organizations infrastructure comprises three key elements
  - Key activities that generate the value propostion
  - Key resources used to create value for its customers
  - Key partner networks and the things that motivate them to be part of the business model
- **Cost structure:** all the monetary costs the business incurs while in operation
- **Customers:** the model analyzes three aspects of the customers of the business
  - Customer segment: identification of target customer

- Channels: delivery channels that connect customers to value proposition
- Relationship type: this is the kind of relationship that a business has with its customers. For example, transactional, long-term, self-service etc.

- **Revenue streams:** it describes how the company makes money from its target market.

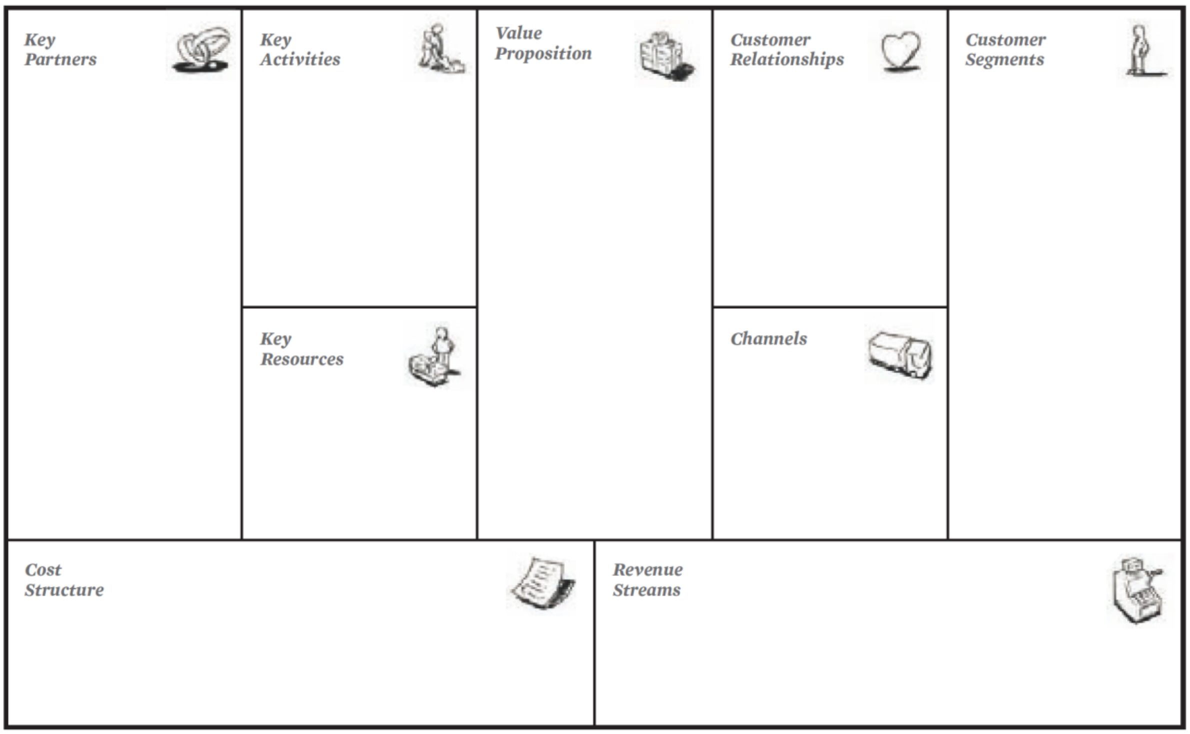

Figure 10:Business Model Canvas (Osterwalder & Pigneur, 2010)

Different researchers have recently used the business model canvass to study the growth challenges of platform business. (Osterwalder & Pigneur, 2010) explained how to use business model canvass for two-sided business such as payment systems. While (Jocevskia, Ghezzib, & Arvidssona, 2020) have used the business model perspective to explore the growth challenges of mobile payment platforms.

2.4 Management of Mobile Money Services

The management of a mobile money service provider has to decide the agent structure to put in place, the organization of the mobile money, the revenue model, product/service launching plan, customer and merchant on boarding strategies and a marketing plan. All these are management aspects of a mobile money service.

Most researches conducted to understand why certain mobile money deployments succeed are mainly focused on operational aspects such as agent network management and customer adoption, it assumes that within the mobile money organization the structures are well built and resourced (Levin, 2012). (Levin, 2012) argued that the poor performance in the operational aspects of the mobile money services are mainly related to due to poor organizational structure and resourcing. Most mobile money operators lack the degree of commitment that mobile money requires, does not manage the mobile money independently from other businesses with its own dedicated and sales and business team, and there are no clear KPIs put in place for the mobile money team and the senior executives (Levin, 2012). This finding is also shared by (Rajiv & Ishan, 2015) who suggested that mobile money should be ring fenced or otherwise be established as a separate entity both from staffing and P&L perspective there by ensuring the appropriate level of autonomy and resource it requires.

Turning mobile money into profitability requires a strong commitment from the mobile money providers (Cobert, Helms, & parker, 2012). Most successful mobile money launches have had the backing of millions of dollars. Safaricom invested $30 million into MPESA, Vodacom spent $25 million and MTN Uganda $10 million in initial investment

(Cobert, Helms, & parker, 2012). If companies are not willing to invest and stay committed, the deployments will not reach scale (Cobert, Helms, & parker, 2012). Like any new business mobile money deployments require a huge upfront investment to achieve benefits. Organizations that expect gains quickly will be frustrated by the short-term results of mobile money services (Levin, 2012).

Banks/mobile money need to reassess their view of mobile money as technology (Rajiv & Ishan, 2015) or as a mere replacement for the teller or an alternative for a branch but view it as a way to develop new customer engagement services (Omarini, 2018). This requires an integrated effort spanning from business strategy down to execution level (Naghavi, 2019). One such strategy that can be followed by mobile money operators is following the "payments as a platform" approach, which will allow them to diversify their revenue stream and expand their value proposition (Naghavi, 2019). Just like any platform mobile money deployment become profitable when there is a wider adoption of the service (Rajiv & Ishan, 2015). Putting in place an appropriate marketing stargtegy that drives user adoption and engagement should take into consideration issues such as transaction fee, referrals and other incentives that keep the customer to be an active user (Rajiv & Ishan, 2015).

A key issue that mobile money operators need to address is the agent network. As the uptake of mobile money service continues, expanding and evolving the agent network becomes even more critical to ensuring a high-quality service (GSMA, 2019). Some such as (Cobert, Helms, & parker, 2012) say managing the agent network is the single most important post launch success factor. Four interlinked problems with agent networks have been observed: these are profitability, proximity, liquidity and trust (Donovan, 2012).

Researchers such as (Rajiv & Ishan, 2015) believe that managing the liquidity of agents is a very critical in terms of building the trust of customers.

Mobile money operators need to put in place strategies and practices that ensure their agents deliver positive customer experience consistently (Davidson & Leishman, 2010). Delivering customer experience is not only related to agent liquidity and other problems associated with agents. Scaling up the agent network is also another important issue which brings the services closer to the customer (Rajiv & Ishan, 2015).

3. Chapter Three: Methodology

3.1 Introduction

This chapter presents the research approach and design followed in the study. It also discusses the data collection and analysis methods involved in the study.

3.2 Research Approach and Design

3.2.1 Research Approach

So far, a systematic analysis of growth challenges of mobile money payment services from the organizational perspective have not been conducted. This is an area that has not been investigated thoroughly. Most studies only focused on the user adoption challenges by using standard models such as the Technology Adoption Model. (Hancock & Algozzine, 2006, 23) suggest that when little is known about an issue, a qualitative research approach is appropriate. Qualitative type of research aims at discovering the underlying motives and desires, using in-depth interviews for the purpose (Kothari, 2004,16). Research in such a situation is a function of the researcher's insights and impressions (Kothari, 2004, 18).

3.2.2 Research Design

There are many types of qualitative research designs. Case study qualitative research type, which is used in this research, is one among them. A case study is a method of study in depth rather than breadth (Kothari, 2004, 126). (Merriam, 2001) suggests that insights gleaned from case studies can directly influence policy, procedures, and future research.

In brief, we can say that the case study method is a form of qualitative analysis wherein careful and complete observation of an individual or a situation or an institution is done; efforts are made to study each and every aspect of the concerning unit in minute details and then from case data generalizations and inferences are drawn (Kothari, 2004, 126). Case study research is favored more than others when the research questions are "how" or "why" and your focus of the study is contemporary as opposed to the historical phenomenon (Yin, 2018, 32).

This study is more of an explanatory case study research. It tries to understand why mobile money deployments are not used for payments with a focus on organizational/managerial aspects. For this kind of study, case study research is the preferred method. Case study research is used extensively in research on payment services (Jocevski et al., n.d.)

There are many players in the mobile money ecosystem, as shown in the figure below.

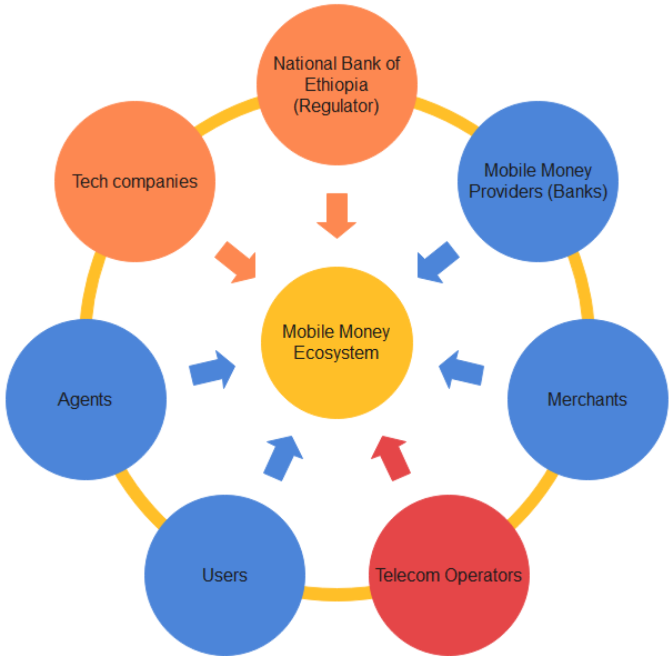

Figure 11: Mobile Money Ecosystem

Studying the role of all players in the ecosystem is a daunting task. This research will only focus on the banks. Banks are the biggest players in the mobile money payment ecosystem; they are the only players who are allowed to issue mobile money as payment instruments. So, the boundary of this case study is limited to Banks.

3.1 Case Selection

Until now the license to operate mobile money solutions was only reserved for financial institutions such as banks and microfinance institutions. Though a new proclamation was enacted last year that paves way for private companies to engage in mobile money services no company has started operation so far. So, to study mobile money-based payment systems one has to focus on the existing financial institutions. In order to understand the reason why mobile money-based payments were not adopted widely, studying only one institution is not enough. Multiple mobile money deployments owned by different financial institutions has to be studied in order to get a clear picture of the case under investigation. For this reason, this study is a multiple case study.

Four different financial institutions have been selected for this research. The following institutions are the selected cases

- Commercial Bank of Ethiopia's **CBE Birr** - Commercial Bank of Ethiopia is one of the largest banks in Ethiopia. The bank has been active in digitalizing its banking businesses. The company was among the pioneers in rolling out core banking systems (CBS), Automated Teller Machines (ATMs), Point of Sales (PoS), and Gift Cards. The bank also has a large branch network, 1600 branches, which is quite a large number as compared to other banks. **CBE birr** is the mobile Money Solution of the Commercial Bank of Ethiopia. CBE birr was put into operation in 2017. It took the company almost five years to start mobile money services after the enactment of the Agent Banking Regulation by the National Bank of Ethiopia. CBE birr has the following services available for subscribers
    - **Cash In:** subscribers can deposit to their CBE birr account using Cash at one of CBE birr agents or from their CBE core banking account. This service is called Cash In.
    - **Cash Out:** the electronic mobile money available in their account can be converted to Cash at par value at any time. So, users/subscribers can take out Cash from their CBE birr account. Their CBE birr account will decrease by an equal amount. This service is called Cash Out. This service is available at CBE birr agents and some selected branches.

- **Send Money:** CBE birr users can send money to a beneficiary. The beneficiary can be a CBE birr account holder or any non-CBE birr user.
- **Buy Goods:** Users can buy goods by using their CBE birr money as long as the merchant is willing to accept payment in CBE birr.
- **Air Time:** users can top up their mobile Airtime from the CBE birr fund.
- **Pay Bill:** CBE birr users can pay bills such as Electric and Water utility bills from a fund available in their CBE birr account.

- Dashen Bank's **Amole** - Amole is a mobile money service operated by Dashen Bank S.C. The mobile money service was launched by Dashen in 2018, a year after CBE birr joined the market. Amole is one of the late entrants into the mobile money market in Ethiopia. The bank developed the solution in collaboration with a local IT company called Fetan technologies. Prior to Amole the Bank had launched to mobile money services called Ende Bank and Mode Birr. Amole provides the following services to its subscribers
    - Airtime
    - DSTV payment
    - Airlines Ticket Payment
    - Content Sales
    - Purchase
- Wegagen Bank's **HelloCash** - the bank launched the mobile money solution in 2017. The technology was provided by Belcash Technology Solutions PLC.
- Anbessa Bank's **HelloCash** - the bank launched the mobile money solution a little bit earlier that is in 2015. The technology was provided by Belcash Technology Solutions PLC.

Almost all banks have started their mobile money services around the same time. Anbessa bank started its service two years earlier than the rest of the others.

3.2 Data Collection

For this research, interviews with the managers of the mobile money services were conducted. This was used as a primary source of data. As a secondary source of data reports from the National Bank of Ethiopia and transaction reports extracted from the mobile money systems of each bank studied were used.

3.2.1 Interviews

Interviews are a very common form of data collection in case study research (Hancock & Algozzine, 2006, 54). Primary data is collected through personal interviews with managers and high-level experts of the banks responsible for mobile money services. Mainly Digital Banking Directors are the people who have a knowledge of their mobile money services and as directors are also people who know managerial issues. The interviews were conducted face-to-face. All interviews were conducted at the offices of the interviewees. The interviews were recorded in a note book and later on transcribed in to a Microsoft word document.

The interview was a semi-structured one. Semi-structured interviews allow researchers to ask predetermined but flexible questions (Hancock & Algozzine, 2006, 55). All interview questions were open-ended questions. A list of predesigned questions was used during the interview, but follow-up questions based on the response of the interviewee were also asked. A semi-structured interview was chosen because, as (Hancock & Algozzine, 2006) puts it, it allows interviewees to express themselves only and freely and to define the world from their own perspectives, not solely from the perspective of the research. The interview questions were mainly focused on the business model components as described by (Osterwalder & Pigneur, 2010) in their business model canvas model. The first set of questions were focused on customers and merchants, that is, the value proposition to them and the overall strategy, then the interviewees were asked to describe the organizational structure, revenue model and cost structures, agent network, technological infrastructure required to sustain the platform.

The interviews, on average last around an hour and 10 minutes.

The interview questions were based on the research questions and/or objectives. The research questions were broken down into interview questions

3.2.3 Analysis of reports

Reports from the financial institutions and the National Bank of Ethiopia (both published and unpublished) and transaction reports extracted from the mobile money systems operated by the banks were also used as a source of data.

3.3 data analysis

Each case was analyzed separately. In addition, a cross-analysis, which compared the findings across the financial institutions, was also conducted.

- Cross-case analysis, which is comparing different organizations based on the responses given by the interviewees.
- Generalizations were made based on the theoretical framework proposed and the findings

4. Chapter Four: Results and Discussions

4.1 Results

All of the people interviewed for this research have stayed in their organization for more than 9 years and in their respective position for more than 5 years.

The reason for starting a mobile money service defines how the mobile money should be rolled out to customers. For all mobile money deployments except Amole, the business case for starting the mobile money service was promoting financial inclusion. Amole had one additional reason, which is promoting digital/Cashless payment services, as one reason for starting the mobile money service. That is why Amole has been focused on digitizing payments across the fast-moving goods chain and facilitating payments for the sale of digital content.

Understanding how a mobile money service is structured within the banks is very important. Because the structure shows the level of support and resource the mobile money will receive and the autonomy the managers of the mobile money will have in experimenting with new things (Rajiv & Ishan, 2015). In all banks the mobile money service head does not directly report the CEO of the Bank. They are treated as one channel of the bank so it belongs to alternative and digital banking divisions, which in turn reports to the Deputy CEOs. Alternative and digital banking divisions do not manage mobile money services they are also responsible for other tasks. So, mobile money is not independently managed.

The level of attention given to mobile money services form the management is little. In all cases higher C-level managers do not set strategies and monitor the progress of plans closely. Mobile money service areas are also not well resourced in terms of man-power. In some instances, they are the dumbing area for employees who do not have a place in other business areas of the bank.

The lack of attention from management can be attributed to low awareness level of top managers. The concept of mobile was and is new to most of them. Even at the National Bank of Ethiopia level the concept of mobile money was mixed with mobile banking and agent banking. This is reflected in the 2012 agent and mobile banking directive issued by the National Bank of Ethiopia. So, the lack of knowledge and awareness is also a limiting factor. Currently, in all banks mobile money service is not a priority area. Other banking services such as loan, international banking are priority for the banks.

In all banks there is no clearly defined mobile money strategy that is aligned with corporate level strategy. There are no targets and metrics to measure performance targets. Performance measurements are mostly done based on short term plans. There is no clear marketing strategy for customer acquisition and merchant on boarding. So far the focus has mainly been on increasing the subscribers or users side of the platform. Merchant on boarding has been very week. While all mobile money service providers had hundreds of thousands even millions of subscribers but the number of merchants had been less than 100 in all cases. Merchant on boarding and subscriber enlisting activities are usually done at the individual initiation of the lower-level staff.

The value propositions to users (customers and merchants) of the mobile money service are not well defined, documented and communicated across the banks. Without a clear customer value proposition all marketing activities and product development exercises will not be successful. There are no even documents that show customer segmentation and strategies to acquire and retain the customer segments.

One thing that is observed across all banks is the overlap of services provided by the mobile money product and mobile banking product. Product cannibalization was observed in commercial bank of Ethiopia, Dashen Bank and Wegagen. These banks seem to have two products that provide almost identical services. The exception here is Anbessa Bank which does not have a mobile banking channel, rather mobile channel is only available for the mobile money service.

CBE birr, a mobile money operated by Commercial Bank of Ethiopia, is the only service that does not levy charges/fees on transactions. All transactions conducted via CBE birr are free of any charge. The main focus has been on getting the user base. The remaining banks follow a tired fee structure, which allows the fees to vary depending on the value of the transactions. Depending on the type of transactions either the payer or the payee is charged with the fee. In all banks measuring the profitability of the mobile money service is very difficult because the mobile money is not structured in a way that has its own profit/loss statement. For example, mobile money services do not have a separate marketing cost. The marketing costs are handled at the corporate level for all activities. The human resource cost and other running expenses are not separately accounted for the mobile money services. All banks do not have a clear set target goal where they expect the mobile money to be profitable. The mobile money services are yet to be profitable for all banks. Most mobile money services become profitable within 3 – 5 years after launch (GSMA, 2019).

All banks do not maintain the mobile money software/IT platform on their own. Commercial Bank of Ethiopia and Dashen Bank have bought the mobile money software platform from a third part supplier. In this model the supplier provides the technology and gets additional payment for maintenance and upgrading services. Anbessa Bank and Wegagen follow a different approach. The mobile money software platform, called HelloCash, is owned by a company called Belcash. Belcash maintains, upgrades and operates the software platform on its own. Other costs are shared by Belcash and the banks while at the same time the revenue is also shared by the bank and the technology provider. This kind of model is normally called a revenue sharing model. One thing that is common in all banks is the technological capability required to maintain the product on their own is very limited. Due to this banks such as Commercial bank of Ethiopia have faced a challenge in modifying the product to meet customer requirements quickly. One instance mentioned here is that the bank had a difficulty modifying the product to meet the requirement of a ride haling service operated by female only drivers called Sergela.

Mobile money services need agents to provide services such as account creation, cash-in and cash-out as well as money transfer services. Dashen Bank mainly uses its bank branches as agents. Business are not enlisted to act as agents in Dashen Bank's case. Commercial bank of Ethiopia, Anbessa and Wegagen use their bank branches and businesses as agents. Commercial bank of Ethiopia has more than 18,000 agents while Anbessa and Wegagen has more than 3,500 agents each. The three banks do not follow a hierarchical agent management structure. Each agent interacts directly with the bank. In a hierarchical agent structure, each bank only interacts with a handful of super agents. Each super-agent in turn handles its own agents on its own. A hierarchical agent structure in

Ethiopia has been widely used by Ethiotelecom for its airtime distribution services. The banks do not only use a flat agent hierarchy but their agents are not also limited to operate only in a certain geography. All banks which have agents have faced similar problems in their agent network. Most agents do not have good knowledge of the services they are expected to provide. They do not maintain enough liquidity that allows them to perform mainly cash out services. Though the banks were not able to put an accurate figure on the percentage of the agents who are active all of them have said that it is below 40%.

4.2 Discussions

Based on the analysis conducted the major themes that emerged in response to the research questions are laid down in this section. The main issues that are limiting the growth of mobile money base payment systems that emerged from the research are:

Absence of a comprehensive mobile money strategy: Mobile money deployments take time to be profitable and they need a huge resource because building agent network, bringing customers and merchants on board is a resource intensive task (ALMAZÁN & VONTHRON, 2014). An appropriate strategy and performance measurement metrics for monitoring progress should be put in place. The strategy should clearly show the revenue model, or more specifically how to generate revenue and a time line that shows when the mobile money is expected to show positive returns. Across the world 60% of mobile money deployments have become profitable within 3 – 5 years period of time (GSMA, 2020). So far none of the mobile money deployments have become profitable. The strategy should not only address revenue models but it also should address marketing strategy. So far the mobile money services have progressed in bringing users on board but the other side of the market, which is merchants are not present in the mobile money services.(Ahuja, 2020) describes the future of payments is frictionless payment. Cash as a payment instrument had been dominant because of it offers a frictionless experience for both the payer and the payee. In recent, years QR (Quick Response) codes are being adopted by a growing number of players to facilitate retail payments, and QR code merchant payments are providing a growth opportunity for mobile money providers (Nautiyal, 2020). Using such kind of features can bring more merchants into the platform and increase transactions within the mobile money platform.

The mobile money services unique features that separate it from other banking services has also to be clearly defined. The mobile banking and mobile wallet/money services provide similar utility to their customer. This shows that there is an absence of a strategy for a mobile money service.

Poor management awareness of mobile money services: Understanding that mobile money deployments need a large investment to get adoption and take time to generate positive revenue is critical. The view of the management of banks currently is that mobile money services are technologies primarily that once deployed will run on their own and attract users (Rajiv & Ishan, 2015). Mobile money services have their own unique behavior. Mobile money has to be viewed as a service offered to clients which requires a more holistic approach issues such as marketing and customer support and product innovation are as important as the technological infrastructure. In order to generate a sizable revenue that brings innovation in products and services is required. innovation such as micro credits that is tied with customer credit scoring is one huge revenue potential. One of the services that is run by Ethiotelecom is a mobile airtime loan service commonly called as 810. Amounts offered start from Birr 15 and go up to Birr 100 as customer establishes repayment record. Ten percent service fee is charged. This service is used by 2 million subscribers every month with birr 1.1 billion loan value. Ethiotelecom has gained 200 million birr in revenue from this service in the year 2020 (CEPHEUS Research and Analytics, 2021). In order to come up with such kind of innovative products and services management awareness and engagement is needed.

Inappropriate structure to handle mobile money service: the mobile money division lack the necessary staffing and other resources. The mobile money services are usually managed along with other banking services, distant from the top management and often lack the required attention. But mobile money services need resource and time in order to be profitable. An appropriate structure that ensures the availability of required resource and the close support of top management as well as that gives mobile money managers the autonomy to experiment with new products and services would require it to be structured in a way that the mobile money service will have an autonomous strucutre with its own Profit and Loss statement (Rajiv & Ishan, 2015)

Poor agent network management: The agents lack capacity and suffer from in activity and low liquidity level. One of the reasons for the poor adoption of mobile money payment services in Ethiopia is the absence of a robust agent network. A robust agent network that can build brand awareness, educate customers, meet liquidity demands is critical for the success of a mobile money deployment. A robust agent network is an indispensable tool in building confidence among users in a service that has low awareness. A poorly managed agent network results in poor customer experience and which in turn erodes trust and drives the business away. The agent network remains a key asset of mobile money providers

(GSMA, 2019). As the uptake of mobile money service continues, expanding and evolving the agent network becomes even more critical to ensuring a high-quality service (GSMA, 2019).

5. Chapter Five: Summary, Conclusion and Recommendation

5.1 Summary

Mobile money services are mainly used for non-payment-related services such as airtime top-up, cash-in, and cash-out services. This has been consistent across all the mobile money services studied in this research.

The mobile money services in all cases do not have a comprehensive strategy that deals with technological, market and revenue aspects. There are no clear targets for the business and management usually do not follow them up closely. Management awareness of the mobile money services is poor. The mobile money services are not being managed independently. They are rather managed mixed along with other banking services and far from the top management’s view and attention.

The agent network lacks liquidity and is not robust enough. The technological infrastructure that was deployed to support mobile money services is not frequently updated and modified to meet customer demands. Clear cost and ROI for the mobile money services are not performed. All banks do not have a plan that shows when they expect the mobile money service to be profitable.

5.2 Conclusion

The lack of attention and support given to mobile money services is one of the factors that is limiting the adoption of mobile money-based payment systems. Attention is given to other banking services such as international banking and loan services. They see it as one channel for the bank to reach customers. The unique aspects of the mobile money service are not well understood. We see that there is a product cannibalization between mobile money and mobile banking services.

A comprehensive strategy that deals with technology, marketing and revenue aspects is absent. Without a strategy and detailed action plan derived from the strategy it is difficult to know and assign the resources required to turn the mobile money business to profitability. There are no strategy that deals with customer and merchant on boarding. For a payment system to be successful both sides of the interaction (payer and payee) has to use the payment service. An absence of a marketing strategy is limiting the adoption of the payment service.

Another factor that is limiting the adoption of the mobile money based payment services is the structure under which they are being managed. Mobile money services are viewed as one channel so they are being managed along with other digital banking services far from the management views. This limits the required level of autonomy required to experiment with new ideas and the resources required to run mobile money and turn into profitability.

High level managements do not have the required awareness to manage and turn mobile money services in to profitability. The view from top management mostly is that mobile money service is a technology that is once deployed will run on its own. It seems that most management do not expect any kind of sizable profit from their mobile money service. The limited awareness is hindering the growth of mobile money-based payment services.

A successful mobile money service need a robust agent network that facilitates customer on boarding and other critical services such as cash in and cash out services. agents are customer contact points. The agents are expected to sell the product to their customers. But all mobile money services suffer from poor agent network. The awareness of the agents is poor, the lack enough liquidity to service customers and are mostly in active. This is one of the reasons for the poor adoption of mobile money-based payment services.

5.3 Recommendation

5.3.1 Recommendation for practice

Based on the conclusions drawn from the study, the researcher proposes the following recommendations to be put to action in order to overcome the challenge.

5.3.1.1 Developing a clear comprehensive strategy

platforms attract two sides of a market. Each side of the market has different problems and needs. The needs of a user are different from the needs of a merchant. Mobile money services operators need to understand the needs of both sides of the market clearly and describe their value proposition to both sides. The communication channel and message need to be crafted very well. The strategy needs to have the following elements

- Clear KPIs and targets

- Clear value proposition for merchants and users. Build customer and user segmentation, identify early adopters and the communication channel. Explore ways of exploiting digital marketing channels. Facebook, Google, and other technology providers have digital marketing tools that allow the business to target and reach their potential customers and measure their successes. In a country where the majority of the population is young, a digital marketing strategy is important.
- Define the costs required to implement the strategy and ways to make it profitable. Mobile money deployments incur a high cost and require longer time and scale to be profitable. Identifying the cost items and estimating the total amount of cost (both fixed and variable), and estimating the revenues is critical. Mobile money operators need to do an estimation of both. In order to reduce costs and increase profits, mobile money operators need to encourage the money to circulate in the platform. Value moving between different accounts hosted within the same platform does not create transaction costs for the provider (ALMAZÁN & VONTHRON, 2014).
- Modify the strategy based on the feedback received from execution

5.3.2 Follow a rapid customer acquisition strategy

The main growth challenge for platform businesses is the chicken and egg problem. Customers will not be attracted unless there are merchants, and likewise, merchants will not be attracted unless there are enough customers on the platform. The initial step for all mobile money service providers is to attract customers first. Then work on onboarding merchants. A rapid customer acquisition strategy can be achieved by Simplifying the user registration process: The current customer onboarding process adopted by all mobile money service providers is lengthy and cumbersome. Simplifying customer onboarding will grow their customer base exponentially. Mobile money service providers need to avoid the customer physical presence requirement for creating an account. Currently, customers are expected to visit a branch or an agent to open an account. Rather, by using the appropriate technical tools, customers should be given a chance to register electronically. This will remove the friction in customer registration.

In addition, using a strategy such as referrals, mobile money deployments can grow their customer base very quickly.

5.3.3 Work with partners to build the ecosystem

Mobile money solutions are platforms that bring in many players between the user and merchants. Technology providers, consultants, and other actors are involved in the space. Partners work in the acquisition and retention of customers and merchants. An e-commerce service provider can use the mobile money solution to facilitate the checkout/payment service. This will allow the mobile money solution provider to bring the clients of the e-commerce company to its own platform. Paypal built its own network on top of e-commerce giant eBay.

5.3.4 Onboard merchants

Unless the growth in subscribers is matched equally with merchant growth, the payments services will find it difficult to take off. Merchant's onboarding strategies should be designed. Lowering the entry barrier to start the service for merchants, introducing faster settlement cycles, modifying the underlying technology to cater to the needs of merchants are some of the strategies that can be followed in growing merchant base.

5.3.5 Foster the culture of continuous innovation

Innovations, especially at the technological level, should happen frequently. Introducing new features such as QR-based payment, replacing USSD with apps interface, simplifying user experiences, ensuring high availability of the system is some of the areas that need continuous innovation. Continuous improvement and innovation will enhance customer confidence and build loyalty.

5.3.6 Build a robust agent network

Mobile money services rely heavily on a robust agent network to perform the most basic transactions, such as Cash-in/Cash-out services. Continuously training agents, monitoring their performance, and taking appropriate corrective measures are important in order to build a robust agent network. Building a hierarchical agent network is also an option that can be tested by banks. Instead of interacting with thousands of agents, banks can work only with a handful of super-agents, and then these super agents, in turn, will have thousands of agents within their network.

5.3.7 Establish a separate entity for mobile money service

Mobile money services should be structured in such a way that gives them autonomy. It could be established as a separate entity with its own board and mangers or an entity with separate management but within the parent company, which is the bank. The entity should have a separate profit and loss statement, full autonomy and accountability.

5.3.2 Recommendation for further study

Following the enactment of payments, instrument issuer licenses by the National Bank of Ethiopia in early 2020, various non-bank actors are attempting to enter the mobile money services sector. The most notable among them is Telebirr, which is owned by Ethiotelecom. The success of Telebirr in acquiring subscribers has been quite impressive. The service, Telebirr, has been able to acquire more than one million subscribers in one week (Quartz Africa, 2021). But can Telebirr be successful in acquiring merchants and overcoming the challenge associated with payments service is yet to be seen? So, researchers can investigate in detail how managerial innovations such as business model innovations, process improvement, organizational changes can overcome the growth challenges of mobile money-based payment services.

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Appendix A: Interview Questions

The interview questions were derived from the research questions. Each research question was addressed by multiple interview questions. The interview questions were cross checked for adequacy and completeness.

The interview questions for each research question were prepared as follows.

- General Question
  - What is your name and position?
  - How long have you been serving in this position?
- Research Question (1): What are the managerial issues that affect the adoption of mobile money-based payments services?
  - what was the reason for starting mobile money service?
  - When was the mobile money service started?
  - Is mobile money one of the priority area for the bank as compared to other services such as loan, international banking?
  - How is the technological infrastructure maintained and updated?
  - Is the mobile money business line clearly separated from others in terms of product differentiation? Is there cannibalization with other bank products such as mobile banking?
- Research Question (2): Is there an appropriate and comprehensive strategy that deals with customer adoption, merchant on boarding, marketing and pricing?

- Do you have a comprehensive strategy specifically targeting the mobile money service?
- Are the stakeholders in the mobile money service clearly identified?
- What value propositions were identified for merchants and users?
- What are the strategies that you follow to on board merchants and users?
- What kind of growth strategy was designed?
- What kind of marketing strategy was designed, if any? Is mobile money marketed independently?
- How was the pricing determined? Whom do you charge for transaction (merchant or user)? What kind of pricing model do you use (tired, flat, percentage or a combination of all of them)?
- How do you measure the success of your strategy? Are there well defined KPIs? Do you measure progress periodically (annually, quarterly, monthly)
- Is the mobile money profitable for your bank?
- When do you expect to get the Return on Investment? Do you have a specific plan where you expect the mobile money to be profitable (earning positive revenue)?

- Research Question (3): Under what kind of structure are mobile money services being managed? Does the structure fit for the mobile money payment services?
    - Under which division is mobile money located?
    - To whom does mobile money report?

    - Do you think the structure fits the needs of a mobile money system?
- Research Question (4): What is the level of awareness of the management?
    - Does the management give attention to mobile money service?
    - Is your mobile money business well-funded?
    - Does management closely monitor the progress and plan of the mobile money business?
    - Is the mobile money division well resourced in terms of man power?
- Research Question (5): What kind of agent management methodology are used? What are the problems associated with agents?
    - What kind of agent management structure/hierarchy do you follow? (are there any super agents, master agents)?
    - Are agents classified based on geography? Or are they allowed to operate any where?
    - Do your agents know the services very well?
    - Do you face problems related with agent liquidity?
- Technological issues
    - Does your system integrate with other systems?
    - Do you maintain the system internally or through a partner?

Appendix B: Mobile Banking Subscribers per region

Type of Payment Channel			***Mobile Banking***									
Year	***A/Ababa***	***Diredawa***	***Tigray***	***Afar***	***Amahara***	***Oromiya***	***Somali***	***SNNp***	***Harari***	***Benishangul***	***Gambela***	***Total***
June,13	2,715	223	113	-	530	2,634	246	2,419	244	112	-	9,236
June,14	51,717	3,458	4,323	393	23,904	24,815	1,062	8,369	978	441	452	119,912
June,15	150,690	8,206	36,346	3,332	84,678	117,639	3,150	50,713	3,683	1,163	409	460,009
June,16	500,154	34,996	90,661	23,583	216,903	277,092	11,937	133,315	10,353	7,075	1,540	1,307,609
June,17	858,715	61,694	156,914	30,168	406,914	592,102	35,086	249,369	19,323	16,475	3,937	2,430,697
June,18	848,098	53,853	181,831	17,289	456,231	721,016	50,536	304,917	18,893	28,263	7,080	2,688,007
June,19	1,513,171	80,810	317,998	29,239	694,012	1,148,628	72,200	564,679	40,238	41,893	23,566	4,526,434
June,2020	2,903,430	128,257	726,073	62,513	1,393,762	2,475,711	128,723	1,126,841	69,201	77,466	47,521	9,139,498

Appendix C: Mobile money Subscribers per region

Type of Payment Channel: Mobile wallet/money												
	A/ABABA	DIRED AWA	TIGRAY	AFAR	AMHARA	OROMIY A	SOMALI	SNNP	HARARI	BENISHANG UL	GAMBELA	TOTAL
Year	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
June,13												-
June,14												-
June,15												-
June,16												-
June,17												-
June,18												-
June,19	1,878,980	95,599	152,320	25,385	209,124	870,399	57,767	262,609	23,346	11,613	11,915	3,599,057