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THE KEY SUCCESS FACTORS OF MOBILE MONEY SERVICES IN SUB-SAHARAN AFRICA
A case study analysis

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Summary

Financial inclusion has long been associated to economic growth, and in Africa nations have long been looking for a way to trigger growth through the financial sector. In this region, access to financial services is low for diverse reasons. First the banking sector has showed difficulties or lack of willingness to reach remote populations. Their bank network is mostly located in urban areas and the banking services are often out of reach for poor people. Secondly, the level of bank accounts ownership is low because the practice has not been completely culturally adopted. Facing the limitations of the banking sector in answering the growing need of nations to formally include populations in the financial sector, mobile network operators have felt the need to step up. Mobile money services were born in Kenya, through Safaricom its biggest telecommunication company. Mobile money is defined as service in which the mobile phone is used to access financial services. M-Pesa, the mobile money service by Safaricom has led the way in linking the use of mobile phones and finance services. Contrary to mobile banking, mobile money does not require bank account ownership or access to internet to perform transactions. Simple text allows users to transfers money among themselves. From a pilot project in Kenya, mobile money services have grown outside of the boundaries of the African continent to reach many developing countries in the world.

Mobile money has been more than just a payment service as it has become inherent part of the

daily lives of many Africans. The improved flow of money have permitted people in remote rural areas to develop their own economic activities with less hardship, and also to receive remittances in a more convenient manner without having to travel long distances. Besides, the mobile money ecosystem includes a distribution network by agents. MNOs[1] were able to capitalize on their agent network that previously only sold airtime, in order to distribute the country even in remote areas. For those agents, mobile money is a business initiative in which they invest and expect returns. When incentives are present, agents are encouraged in taking the mobile money initiative, and when the network of agent is larger the likelihood of more registered customers becomes higher.

Despite proven successes in sub-Saharan Africa, mobile money still presents many challenges to overcome in order to increase adoption and improve the service. In some countries regulation of mobile money services has yet to be supportive of the service for it to grow. Many mobile money schemes still struggle to increase adoption of the service for lack of customer awareness. Many people have still to get properly educated about the service and how it can impact their lives. Cases of fraud also prevent the development of mobile money services. It decreases the trust that people harbor in the technology which eventually led to less people entrusting their money to MNOs. In addition to that, one important challenge remains the issue to interoperability. The regulators have started to assess the importance of having the different mobile money platform compatible among each other. Interoperability is available in only a handful of country offering mobile money services.

Many countries have adopted the mobile money technology with different level of success. Kenya has been very receptive to the service and leads the world in term success of mobile money. Mobile money in Kenya has always been on the front of innovation in the industry, providing new products for the benefit of customers. Ghana also enjoys a successful mobile money market. The transaction value has doubled this year revealing how important the service is in the country. Côte d'Ivoire, a country neighboring Ghana, has been adopting mobile money services at its own pace. Although having the technology introduced in the country the same year as Ghana, the Côte d'Ivoire market is still trailing the like of its neighbor and Kenya. This situation reveals significance

[1] Mobile Network Operator

differences among sub-Saharan African countries. For a long time, it has been a common belief that the African market was socially and economically similar all across the continent. The mobile money technology has shown various adoption levels, showing that mobile financial services have specific key success factors. This study has revealed the role of factors at the country level such as regulatory framework, factors about the mobile money deployment itself such as the business model, and factors regarding the mobile money services providers, such as existing market share. Kenya and Ghana have reached a level of maturity in their mobile money operations that Côte d'Ivoire has yet to do. Improving the environment in order to make it suitable for mobile money services should be the priority of the Côte d'Ivoire market if it intends to reach the levels of maturity as the likes of Kenya and Ghana. The responsibility should be shared among governments and MNOs to improve the mobile money ecosystem and make every stakeholder better off.

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CHAPTER 1. INTRODUCTION

Section 1. BACKGROUND OF THE STUDY

Industrialization has always had a positive correlation with how fast countries develop economically and socially. Over time society has come to go through different stages of industrialization, from the creation of the light bulb to artificial intelligence. Today, in the midst of the fourth great industrial revolution, the world is moving from automated to autonomous technology (Shani, 2018 [1]). Despite the technological advancement of our society as a whole, this evolution has not been in a uniform manner. In fact, developed nations have spearheaded new technology research and use, greatly supported by their economic power as well as knowledge. But smaller economies have not, for the most part, caught up with the high end technology of our times and have to adapt according to their means but more importantly while matching their own specific needs.

However, some technologies such as the mobile phone have had a quasi-uniform global adoption rate. Even in the poorest countries, the penetration of mobile phone technology has been substantially growing in the last decade. According to the GSM Association (GSMA[2]), the global market for mobile subscribers accounted for more than 5 billion unique users in 2017, with a global penetration rate of 66%. It is expected to growth to nearly 6 billion unique users in 2025 with a 71% penetration rate. Mobile internet usage, to a lesser extent, is also significantly growing with a global rate of penetration of 43% in 2017. During same year, whereas Europe led the way in mobile phone adoption with an 85% penetration rate, sub-Saharan Africa trailed the rest of the world with only 44% of people adopting the mobile phone technology. According to the *The Mobile Economy Sub-Saharan Africa 2017* by GSMA, the sub-Saharan Africa region has the fastest growth rate of cell phone adoption in the world. From now to 2020, the CAGR is expected to be 6.1%, with approximately half of the population with a cell phone subscription (GSMA, 2017[2]). The rise of cell phone usage in sub-Saharan Africa is mainly due to higher affordability of cell phone devices

and services as well as obsolescence and lack of convenience of original landline phones. The popularity of mobile phone have been so tremendous in this region than in some countries, mobile phones are more common than electricity, with people walking kilometers to charge their devices (The Economist, 2017[3]).

The uses for cell phones are quite various. Although basic cell phones were solely used for calling and texting, nowadays phones are much more multitask. With Internet becoming mainstream, traditional phones became smartphones with endless possible uses. In addition to the call and text functions, uses vary from simple GPS localization, accessing to web pages and diverse applications, accessing bank services; to much more advanced uses like controlling the electronic devices of a house for example. Smartphones has become inherent part of our lives.

In Africa however, smartphones penetration have been slowed by a much lower purchasing power and small internet coverage. As a whole the continent rely more on basic cell phone devices. But this has not prevented the continent to develop unique uses out of cell phone technology in order to solve local issues. The sub-Saharan Africa region has initiated the development of the Mobile Money technology in order to address the issue of financial inclusion. In most part of the region the access to financial services, such as owning a bank account, remains a challenge. In 2016 the percentage of the adult population having access to a bank account was just 32.8%, far behind the global rate of 67.1%. The development of the financial sector in sub-Saharan Africa has long been associated with sustainable growth (Mlachila et al., 2016[4]). For instance when the financial sector is capable of mobilizing and turning savings and direct funds into financing of the economy, it allows efficiency in the allocation of resources and boost productivity (Mlachila et al., 2016[4]). That fact motivates governments in creating facilitating policies for the banking sector, which usually dominates the financial sector, in other to capture more savings.

But in 2007, many nations of Africa came to the realization that the banking sector will not be the solution in giving extensive access to financial services. Kenya, through Safaricom its biggest

telecommunication company, led the way in building a bridge between mobile phones and finance and thereby creating the mobile money technology. According to GSMA, Mobile money is a service in which the mobile phone is used to access financial services. Although this may sound similar to traditional mobile banking, there exist major differences. In mobile banking, in order to access your bank account and perform various transactions, it is required for the user to use a smartphone with internet access and naturally to own an account in a banking institution. Such practices will be hard to implement in most regions of Africa known for low internet coverage, low smartphone penetration as well as low levels of financial inclusion. On the contrary mobile money solely relies on basic phones by utilizing basic SMS service. In 2016, GSMA reported 140 mobile money services provided in 39 countries in sub-Saharan Africa. The technology has not only been massively adopted in Africa but also in several regions of the world, especially in developing countries. In 2016, two third of low and middle-income countries in the world had access to the mobile money technology (GSMA, 2017[5]). Today in Africa mobile money is providing access for the first time to financial services to millions of people thereby permitting them to contribute to the economic growth and social development on the region (Granryd, 2017[6]). Telecom companies have suddenly appeared as a major player in the financial sector and brought a full scale revolution for the region.

Section 2. STATEMENT OF THE PROBLEM

The adoption of the mobile money technology is undoubtedly tremendous all over sub-Saharan Africa. However, the different countries of the region, naturally distinct in their own way, have incorporated the technology in diverse manners. Some countries like Kenya in east Africa that spearheaded the service is the global leader in mobile money services. The telecom companies providing the technology have a large array of services available for the Kenyan population. Other countries, such as South Africa for example have less success with a lower penetration rate. Countries like Ghana and Côte d'Ivoire, despite being in the same geographical zone (neighboring countries) and having similarities in their economies largely differ in adoption of mobile money

services. This is showing that there must be specific key factors determining success of the technology in Africa. This study aims to cast a light on the specific factors that facilitate the adoption of mobile money in sub-Saharan Africa. In addition, the study will provide recommendations for targeted countries on how to develop a more mature mobile money market.

Section 3. OBJECTIVES OF THE STUDY

The main objective of this study is to identify the key success factors of mobile money in sub-Saharan Africa. In order to do so, we have underlined the following 4 specific objectives:

1.3.1. Specific objectives

1. Assessing the state of the overall market for mobile money in sub-Saharan Africa
2. Assessing the state of the mobile money market in Kenya, Ghana and Côte d'Ivoire
3. Identify the key success factors of mobile money in Sub-Saharan Africa
4. Identify how can Côte d'Ivoire develop a more successful mobile money market

Section 4. RESEARCH QUESTIONS

In order to accomplish our objective, the following questions will be answered:

1. What is the state of the overall market for mobile money in sub-Saharan Africa?
2. What is the state of the mobile money market in Kenya and Ghana and Côte d'Ivoire?
3. What are the key success factors of mobile money in Sub-Saharan Africa?

4. How can Côte d'Ivoire develop a more successful mobile money market?

Section 5. THE SIGNIFICANT OF THE STUDY

Initial observations have shown that the large adoption of mobile money has generated positive externalities in diverse areas. Giving the ability to population to use and benefit from mobile services has helped them in their daily lives. Improved financial access in a community means the flow of money is high providing expanded opportunities for populations. Despite having significantly reduced, in most part of Africa, poverty is still very high. In fact, according to the World Bank estimates, extreme poverty has been declining to 43 percent in 2012 compared to 57 percent in 1990 (Beegle, Christiaensen, Dabalen, Gaddis, 2016[7]). But the population of the continent has been tremendously growing as well bringing the number of people living in extreme poverty up by more than 100 million (Beegle, K. et al.,2016[7]). Those numbers are indicative of the situation in most part of sub-Saharan Africa, situation which must be addressed. Governments in collaboration with international agencies have been forever trying to develop regulations and measures to decrease poverty, with slow results. Fortunately, the creation of mobile money, telecom companies have brought an unexpected way of tackling poverty. Various studies have drawn to narrow correlation between poverty and financial inclusion. The more the poor are able to save, the more they prepare themselves against the unexpected and plan their future (Driver, M., 2015[8]). From money circulating and being saved more easily, it is business initiatives that can be created and the development of whole ecosystems. As a result of community's development, jobs are created thereby improving the lives of the society as a whole. Acknowledging its impact, global leaders have placed financial inclusion in the new 2030 Sustainable Development Goals as an important contributor to the achievement of several other development goals (UN Capital development Fund, n.d.[9]).

This study aims to provide recommendations for sub-Saharan nations, especially Côte d'Ivoire,

to improve financial inclusion through developing a successful mobile money approach.

Section 6. SCOPE AND LIMITATIONS OF THE STUDY

This study will focus on the sub-Saharan market for mobile money services, with a special focus on Kenya and Ghana where the market for the technology is in a matured stage, and Côte d'Ivoire which is still a maturing market. The study might not be able to analyze some aspects of mobile money in those 3 countries in their entirety as all data are not being made public. However, this study is keen is revealing the key success factors of mobile money in each on the three designated markets.

Section 7. ORGANISATION OF THE STUDY

The layout of this study is done into five chapters. In chapter one the background of the study, the statement of problem, the objectives and the research question, the significance of the study, the organization of the study as well as the scope of the study will be discussed.

In chapter two, supported by literature reviews, we will be discussing in depth the overall market of mobile money, with a focus on Kenya, Ghana and Côte d'Ivoire. Chapter three is dedicated to the various research and data collection methods used in this study. In chapter four the result of the research is analyzed and explained. The last chapter, chapter five provides summarize the study and provides recommendations in order to fulfill the aim of the study.

CHAPTER 2. REVIEW OF MOBILE MONEY SERVICES

INTRODUCTION

The main objective of this chapter is to analyze relevant literature reviews by having an insight on various studies and articles to find about what other researchers, authors and specialists thought about the current study. This chapter provides a deeper understanding of the global mobile money market and its trends as well as the much scrutinized African market for the technology. Furthermore, this chapter evaluates the mobile money market of Kenya, Ghana and Côte d'Ivoire by assessing the local environments, market segmentation, ecosystem and profitability of mobile money services. In addition to that, the adoption of the technology in each country, the various business models, the different player in each market and the state of the competition will be analyzed. At the end of our study, the opinions from the literature review will be compared to our final results.

Section 1. GLOBAL MOBILE MONEY MARKET

The global market for mobile money has been substantially growing in 2017. The technology is now available through 276 mobile money schemes in 90 countries, with three quarter of them being low and middle-income countries (GSMA, 2017[5]). Between 2016 and 2017, South Asia has recorded the highest yearly growth in the world. Whereas in developed economies digital payment systems such as credit cards and NFC payments dominate the market, mobile money is leading the digital payment system in low and middle-income countries in the world. A 25% increase in customer registration has been observed just between 2016 and 2017, with over 136 million new customers during that period (GSMA, 2017[5]). In 2017, 690 million mobile money accounts were totaled globally.

Besides the growing adoption of the payment technology, mobile money constitutes a big money business. According to GSMA, the global industry of mobile money is processing in average 1

billion dollar per day, with recorded direct revenues rising to over 2.4 billion dollar in a year. It is also reported that the monthly total transaction of a typical mobile money customer is 188 dollar. Services offered are increasingly being diversified with more mobile money deployments in several countries providing more than just basic payment system. In fact, over 20% of mobile money schemes offer access to savings, pensions and many other investment products (GSMA, 2017[5]). This rate is estimated to be growing to 37% by 2018, with the rise of innovation in the industry.

Among the 276 mobile money deployment existing globally, 41 of them belong to the East Asia and Pacific region, 34 to the Latin America and the Caribbean region, 40 are located in South Asia, 18 in the middle east and north Africa region and a massive 135 only in the sub-Saharan Africa region.

Section 2. SUB-SAHARAN AFRICA'S MOBILE MONEY MARKET

Since the introduction of the mobile money technology, the sub-Saharan Africa region has always been the heart of the global industry. Since the introduction of the technology in 2007 by the Kenyan telecommunication giant Safaricom, it has been spreading to all part of the continent with sustained growth. Strong of 135 mobile money deployments, more than anywhere else in the world, the region is driving the industry. According to GSMA, 40% of the combined adult population of Gabon, Ghana, Kenya, Namibia, Tanzania, Uganda and Zimbabwe is using mobile money on an active basis. The region has registered 52.5 million more account between 2016 and 2017, with an 18.4% yearly growth. The volume of mobile money transactions passed 1 billion in 2017, with exactly 1.2 billion of transactions which is a 17.9% growth compared to 2016. The volume of transaction has been followed by the total value of transaction, which recorded a yearly growth of 14.4% in 2017, with a total value of 19.9 billion dollars transacted that same year.

Although sub-Saharan Africa has experience success, further regional segmentation shows that some regions are enjoying better success than others.

For instance, the eastern part of Africa dominates the region in terms of mobile money adoption. The eastern Africa region had 191 million registered accounts in 2017, which is 56.4% of the total amount of registered customers in sub-Saharan Africa. The east region also massively dominates in terms of transaction volume, totalizing 870.8 million transactions which represent 72.5% of the total number of mobile money transactions in sub-Saharan Africa in 2017. The volume of mobile money transactions is also as massive in the eastern part of Africa. The value of those transactions was recorded at 13.2 billion dollar in 2017, thereby griping 66.3% of the total value of transactions in sub-Saharan Africa.

In contrast, the southern part of Africa does not enjoy the same success. Although the region experienced a 29.4% yearly increase in the amount of registered customers, they are still fewer than any other region with only 10 million registered accounts. Understandably, the number of deployment in the region is small with only 11 out of the 135 mobile money deployments in sub-Saharan Africa. The volume of transactions in 2017 amounted to 10.5 million, representing just 0.08% of the said amount of the sub-Saharan African region. Naturally, the transaction value is equally small with only 123.4 million dollars, in other words 0.006% of the whole sub-Saharan Africa market.

The West Africa region is an emerging region in terms of mobile money. The region counts more mobile money deployment than any other part of sub-Saharan Africa, with 57 mobile money schemes. In 2016, they were more than three times as many mobile money subscribers as Facebook subscribers (GSMA, 2016[10]), showing the massive adoption of the service. When comparing to the total number of each factors in sub-Saharan Africa, we can see that the region is the second most successful after east Africa. West Africa counts 30.8% of all registered accounts with 104.5 million of registered customers. Transaction volume in 2017 was 211.9 million, in other words 17.6% of all transactions. Transaction volume in the region, 5.3 billion in 2017, is only surpassed by east Africa and represents 56.6% of the value of mobile money transactions in sub-Saharan Africa.

Section 3. THE MOBILE MONEY ECOSYSTEM IN SUB-SAHARAN AFRICA

2.3.1. Providers

Mobile money is the convergence of two industries, banking and telecommunications that used to work separately. In Africa, most digital money efforts have been led by the telecom companies (Ivatury, G., Mas, I., 2008[12]). Mobile Network Operators (MNO) succeeded in reaching the unbanked in areas and ways where the traditional banking system fell short. Although banks have now entered the market, none of the initial mobile money deployments was a bank-led project (Ivatury, G., Mas, I., 2008[12]). MNOs are the main but not the only providers of the mobile money technology in sub-Saharan Africa. Their success have brought more players into the market and led to the building of several partnerships where players capitalized on each partner's strengths. Mobile money providers in sub-Saharan Africa fall into one of five archetypes (Chironga, M., De Grandis, H., Zouaoui, Y., 2017[13]).

MNO-dominant: Under this model, which is the most popular, the MNO is in charge of most of the value chain which comprises providing the base technology for payment processing as well as the agent network for distribution. MNO solely rely on banks for deposit. MNO-dominant providers have seen success over the years. Great success stories are the case of the MNO Safaricom in Kenya, through its service M-PESA, which is also the world's most successful mobile money deployment in the world. M-Pesa has 27.8 million registered customers in a nation of 45 million people (Reuters, February 2018[14]). MTN Mobile Money from the South African telecom giant MTN also enjoy a large number of customers, 41 millions, over 15 African countries. The French telecom Orange, also present in Africa, services 16 million registered customers across 14 countries (Chironga, M., De Grandis, H., Zouaoui, Y., 2017[14]).

MNO-led partnerships: In this framework, the MNO is supported by a bank in order to provide

services such as payments, loans and deposits. One example of MNO-led partnership is M-Shwari in Kenya, born from the alliance of services between Safaricom and Commercial Bank of Africa (CBA) a local medium sized bank.

Bank-led partnerships: In this model, customers are able to send money from their mobile accounts to any bank account, in addition of accessing loans and deposits option. Equity Bank and the telecom Airtel have partnered under this type.

Fintech solutions: Customers can send money and perform transactions online. The best example is Paga, a Nigerian Fintech company with a 6 million customer base today.

2.3.2. Distribution

MNOs distribute the mobile money service through a large network of agents. Agents are the frontline of any mobile money deployment because they need to sign up customers for mobile money to have customers, they need to maintain float for transactions to be operated and they need to be reliable for the mobile money service to be seen as reliable if they don't sign up customers, no customers sign up; if they don't hold float, customers can't transact; and if they aren't reliable, the mobile money service won't be seen as reliable (Davidson, N., Leishman, P., 2012[15]). For the most part, MNOs have utilized their already existing airtime selling agents network to distribute mobile money services. Thanks to mobile money being profitable, a lot of agents are entering the market thereby extending the agent network. Setting a mobile money distribution station is like owning a business. The main partners are obviously MNOs who coordinate the activity from top to bottom. As any other business, the agent activity needs to be properly incentivized in order for the mobile money business model to be sustainable. In all the mobile money schemes, agent is paid on a commission basis (Davidson, N., Leishman, P., 2012[15]). Most of the time, agents have others activities besides operating a mobile money station so it is crucial for MNOs to build the right commission model, under which agent perceive the benefit of doing that extra activity (Davidson, N., Leishman, P., 2012[15]).

2.3.3. Transaction flow

One of the most popular mobile money services is the money transfer from one person to another. Generally during this transaction, three steps which are cash-in, cash out, and money transfer, are to be undertaken. First, a Customer A visit the nearest available agent station and ask for a cash-in. According to GSMA, the cash-in is the process by which the customer will credit his account. The customer will give the desired amount to be credited in cash to the agent, who will be the one crediting the customer's mobile money account. Secondly, now his account credited, Customer A will now perform a simple transaction of sending money to the account of a Customer B, the recipient. Sending the money will be done under the form of a simple text message containing a transaction identification code. Customer B, having received the code, will visit the nearest agent station in his area. Once there, the recipient will perceive in cash the amount transferred. This action is called a cash-out.

2.3.4. Services

Sending money from one customer to the other is not the only mobile money service available. Services are quite diverse and vary from one country to the other, depending often on how matured the market for mobile money is in a given country.

Cash in

As previously described cash-in is the process by which the customer credits his account, via a mobile money agent.

Bank to wallet

This service allows the customer to directly credit his mobile money account through linking it to his own bank account. This service is generally available in higher and more sophisticated mobile money market.

Bulk disbursements

The bulk disbursement service allows a customer or an organization to send payment to groups of people in just one click (Safaricom, n.d.). This service guaranty cost and time saving as well as convenience. In 2011, bulk disbursements accounted for 4.9% in value of services available in sub-Saharan Africa. In 2016, this percentage slightly decreases to 4.3% of the total product mix of the region (GSMA, 2016[11]).

International remittances

This service allows customers to send or receive money to or from a foreign country. In 2011, this service represented 0.2% in value of the services available in the sub-Saharan African market. Five years later, international remittances still represent a small percentage of the product mix with only 1.3%.

P2P transfer

This product is by far the most popular. In 2011, it accounted for 86% in value of the whole region and 32.3% in volume of services. Five years later, with a more diversified service mix, the percentage fell to 70.4% in value and 24.4% in volume of service in sub-Saharan Africa.

Air time

Air time is the time spent for calling. Since it is the same MNO operating the service, people can refill their airtime directly by using their mobile money account. In 2016, the value of airtime was just 6.1% of the total value of services offered. However, during the same year, airtime accounted 58.9% in the terms of volume. People rely on their mobile money account to recharge their airtime, but it is in fact just many transactions of small values.

Bill payments

In 2016, 11% and 11.8%, in value and volume respectively, of mobile money products were used to pay bills.

Loans

In some countries like Kenya, MNOs offer service to access loans through the customers' mobile money accounts.

Section 4. SOCIOECONOMIC IMPACT OF MOBILE MONEY

The impacts of mobile money are numerous. The technology has positively impacted the whole financial ecosystem. Indirectly, the banking system now has access the formerly unbanked population through the mobile money network. Although MNO-led mobile money deployments are essentially in charge of the whole supply chain, they still rely on banks for deposit purposes. A situation, very much in the favor of banks, that allowed banks to be in closer contact with MNOs by developing partnerships. MNOs themselves have tremendously capitalized on the distribution of this technology in Africa. It allowed them to diversify their products by creating a new lucrative market, in addition to traditional mobile network services. However, the positive externalities of mobile money are not solely limited to the financial sector, but extend to the macroeconomic level. In the presentation of the result of his research, Macroeconomic *impact of mobile payment services: A survey of research evidence* (2016), Dr. Iyabo Masha has identified three key macroeconomic impact of mobile money. According to him, a higher financial inclusion impacts economic growth, inequality and the stability of the financial system.

2.4.1. Impact on economic growth

The growth of mobile money services lead to the expansion of financial inclusion, in breadth and depth (Masha, I., 2016[17]). The financial development theory tells us that the degree of financial intermediation is positively correlated to growth and employment (Levine, R., 2005, Pasali, S., 2013[18]). Empirical evidence supports the positive relationship between higher financial inclusion and growth and employment (Sahay, R. et al, 2015[19]). Besides, higher financial inclusion improves the efficiency of government spending through and efficient execution of government-to-person transfers (Masha, I., 2016[17]). However, in *Finance, institution and economic development (2006),* Demetriades, P. and Law, S.H.tell us that this positive relationship does not hold in countries with weak institutional frameworks, such as in economies with low level of financial regulation [20].

2.4.2. Impact on Inequality

In addition to growth, the increase in financial inclusion through mobile money services has had an impact on inequality. Masha, I. research shows that inequality decreases when a country progresses through intermediate and advanced stages of financial development (Jahan, S. & McDonald, B., 2011[21]). This is the case for most nations in sub-Saharan Africa that are currently benefiting from the mobile money revolution. Mobile money contributes in close the income gap for a country as a whole.

2.4.3. Impact on Financial Stability

The recent massive adoption of mobile money services impacts the financial system in several ways (Masha, I., 2016[17]). Better financial inclusion leads to better financial stability, as higher deposits make bank more resilient to financial shocks (Han, R. & Melecky, M., 2013[21]). Therefore, when banks collect MNOs deposits, which are inflated by their successful mobile money operations,

it helps them and the whole financial sector to be stable. Stability in the financial system leads to stability of the economy.

2.4.4. Impact on sustainable development goals

In a joint effort to improve the standard of living in poor countries, heads of states and the United Nations (UN) have drafted the Sustainable Development Goals (SDGs) that came as a replacement for the Millennium Development Goals the formerly established development targets. Out of 17 targets, mobile money contributes to 10 development goals.

Goal 1: No Poverty: By facilitating access of the poor to financial services, mobile money contributes in decreasing their vulnerability to economic and social shocks (Scharwatt, C., 2016[23]). A research in Kenya has shown that mobile money users were indeed less vulnerable to unexpected events that impacted their income.

Goal 2: Zero Hunger: Mobile money services give the opportunity to populations to operate more efficient activities and generate more income. For instance, it helps farmers to purchase new and better equipment to increase the productivity of crops by providing better payment mechanisms (Scharwatt, C., 2016[23]). This would be more difficult if they did not have any access to financial services. In addition to that, those farmers can obtain loans through mobile money to help them boost their activities.

Goal 3: Good Health and Wellbeing: Health is an important issue in poor areas of Africa. The costs of going to hospital for poor population is high, especially if there are living in rural areas, generally with fewer hospitals. Mobile money services enables access to funding by helping the customer anticipate shocks through savings, facilitate quick transfers of funds from family or friends in the case of emergency (Scharwatt, C., 2016[23]), and access to loans. In addition to that, some MNOs are now providing health insurance to mobile money users (Scharwatt, C., 2016[23]).

Goal 4: Quality Education: MNOs are increasingly partnering with schools to enable a more efficient payment system for school registration fees, school fees, and exam fees. In 2016, 99.3% of

secondary school student in Côte d'Ivoire paid their school registration through mobile money (Scharwatt, C., 2016[23]).

Goal 5: Gender Equality: Various researches have shown that women feel more empowered when they are able to save and spend their money how they see fit. In some countries in rural areas, the husband may be the one controlling the couple money. That prevents the woman to develop her own activities and be independent. Mobile money provides independence and empowerment by giving access to financial services while respecting the woman privacy (Scharwatt, C., 2016[23]).

Goals 6 & 7: Clean water and sanitation and Affordable and clean energy: In sub-Saharan Africa, access the mobile phone is more common than access to electricity or clean water (Scharwatt, C., 2016[23]). This provide an opportunity for mobile money operators to build a bridge between poor people and access to basic utility services by developing adequate, remote and secure payment schemes for people with irregular income (Scharwatt, C., 2016[23]).

Goal 8: Decent Work and Economic Growth: For small business owners, mobile money facilitate overall management by providing basic booking keeping, cash flow and liquidity management (Scharwatt, C., 2016[23]). In Kenya, the result of a survey shows that business owners have experienced growth just by using mobile money (Scharwatt, C., 2016[23]).

Goal 9: Industry, Innovation, And Infrastructure: Access to credit is boosted also by mobile money services, solving issues related to small businesses development. Kenya has mobile money schemes to accept unsecured cash advance for users (Scharwatt, C., 2016[23]).

Goal 10: Reduce Inequalities: Mobile money is a necessary tool in helping reduce income barriers, through facilitated remittances transactions, in a cost and time saving manner.

Goal 13: Climate Action: Weather-indexed mobile insurance services in Kenya help protect farmers against any climate disaster that affect their business activity (Scharwatt, C., 2016[23]).

Section 5. CHALLENGES FACING MOBILE MONEY SERVICES

The success of mobile money in sub-Saharan Africa is undeniable. This technology has been an opportunity that has led millions of people to be part of the formal financial system, and by that to contribute to their economy while improving their standard of living. Although, this remarkable success, there is still a significant margin of progression and step to be undertaken in order to keep the service sustainable in the future. Mobile money services still face many challenges that present both a risk for providers and users.

2.5.1. Regulation

The regulatory environment is key for mobile money development. Regulation has to be supportive of the services in order for it to fully bloom to its maximum potential, and therefore continue in contributing to lowering financial exclusion in the continent. In many countries, the regulators do not encourage the use of the technology, sometimes for fear of it being a competition to the banking sector. Therefore in some countries, reforms are slow and MNOs find it difficult to effectively participate in the financial sector (Ondiege, P.O., 2015[24]). For instance, many central banks still demand that any form of banking must be operated by licensed deposit-taking institutions, which restrict MNOs (Ondiege, P.O., 2015[24]). In addition to that, in some countries such as Nigeria, the regulation does not authorize mobile money providers to set up their distribution networks. Such policies not only limit the penetration of mobile money for the unbanked populations but also constrain MNOs to address operational challenges (Ondiege, P.O., 2015[24]).

2.5.2. Taxation

The success of mobile money has been an opportunity that presented itself for governments. In fact, in many countries of sub-Saharan Africa, governments have increased the taxation on mobile money services. In Côte d'Ivoire for instance, the government has implemented a 0.5% tax each on mobile money transactions. A decision that was not well received by the providers and users, as the

common idea is that the government should enable the adequate environment to facilitate the spread of financial inclusion. That decision, whose aim was to increase the state's public revenues, renders the mobile money transfers more expensive. The tax is paid by the originator of the transfer, meaning that in addition to the fees on the transactions charges by the MNOs the customer will have to pay extra for taxes (Edjo, M., 2018[25]).

2.5.3. Customer awareness

In order to accelerate adoption of mobile money, MNOs must overcome such issues as customer's awareness. Some people either do not have any knowledge about the technology or do not see the need for them to use it in their daily lives. According to GSMA, some people do not complete the registration process and never get to try the product. Some others do not understand the mechanisms of using basic services such as transfers, and others do not trust the operator with their financial operations. Such issues must be addressed in order to promote access to financial services to unbanked populations. Investments in marketing, making the product simpler to understand and developing trust will be effective in solving the problems related to customer awareness of mobile money.

2.5.4. Fraud

The success of mobile money has led to the increase of criminal activities, targeting both the customers and the agents. Fraud and criminal activities around mobile money services lead to major losses in revenues for providers (Buku, M.W. & Mazer, R., 2017[26]). An example of consumer-affecting fraud is false promotions and phishing scams (Buku, M.W. & Mazer, R., 2017[26]). Also, agents who overcharge transactions or ask for PIN code, which makes the customer vulnerable (Buku, M.W. & Mazer, R., 2017[26]). Despite the fact that using mobile money makes consumers vulnerable to fraud, only a small number of frauds are reported to MNOs. This shows that

the service providers do not have effective channels to file complaints (Buku, M.W. & Mazer, R., 2017[26]). Agents are also the target of frauds. A common example of fraud targeting agents is scams involving impersonation of MNO staff (Buku, M.W. & Mazer, and R., 2017[26]) in order to access the agent's account.

Fraud also exists within the MNO operating the mobile money service. In 2011 in Uganda, MTN lost an estimated $3.4 million as a result of an internal fraud perpetrated by staff members (Buku, M.W. & Mazer, R., 2017[26]). Lack of internal control and poor governance within the MNO can lead to the institution being more vulnerable to fraud (Buku, M.W. & Mazer, R., 2017[26]) and therefore putting all remaining stakeholders at risk.

2.5.5. Interoperability

Cross-functionality across mobile money platform is one of the most debated topics in sub-Saharan Africa. Interoperability means the ability to perform mobile money operations between several users of several MNOs. Currently in most of the countries, cross-functionality is not yet implemented and customers can, for instance, only send money to friends of family of the same mobile network. This limits the potential and the penetration of mobile money as it reduces the flow of cash. Many countries such as Kenya and Ghana have started to authorize interoperability among the main providers of the service in their country. Despite knowing the potential of interoperability, countries like Côte d'Ivoire have yet to enable supportive regulations promoting cross functional platforms with mobile money providers.

CHAPTER 3. CASE STUDY ANALYSIS OF MOBILE SERVICES IN KENYA, GHANA, CÔTE D'IVOIRE

Introduction

In this chapter an investigation of the overall state of mobile financial services in three African countries was carried out. These countries of focus are Kenya, Ghana and Côte d'Ivoire. Over the last decade, mobile money services were vastly adopted in these countries. However, Kenya, Ghana and Côte d'Ivoire have shown differences in term of overall success of the technology. This chapter will introduce the environment of each country as well as the performance of mobile money services.

Section 1. THE CASE OF KENYA

Kenya is a country of the eastern part of Africa with an estimated population of 46.6 million of inhabitants in 2017, according the Kenya National Bureau of Statistics (KNBS). The main languages are English and the local language the Swahili. The country has recorded in average between 2013 and 2017 a growth domestic product (GDP) growth of 5.5%. In 2016, the International Monetary Fund ranked Kenya as the 9th economy of the African continent.

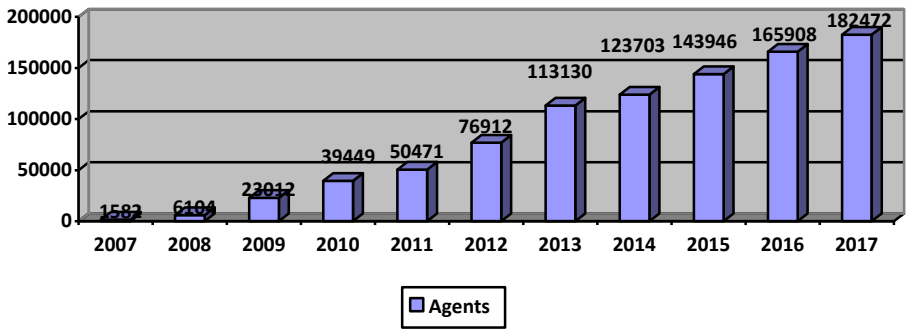
The country has started the mobile money revolution in the world through its MNO Safaricom. Kenya's first and most popular mobile money service is M-PESA. The "M" stands for mobile and "PESA" for money in Swahili. The service was initially a pilot project aimed to enable microfinance loans using mobile phones. When the initial service was launched, Safaricom found that users who received the loans also transferred it to family and friends in remote areas (Joseph, M., 2017[27]). By observing how people were actually using the technology, the Kenyan telecom giant decided to adapt its service to better fit the obvious need of the market. Ever since, M-Pesa has been a huge success leading arguably to the biggest financial revolution in Africa of the decade. In 2014, Safaricom was named Kenya's number one taxpayer for the seventh year straight, showing the

importance of the success of M-Pesa for the whole country.

The market for mobile money in Kenya is orchestrated by several players among which the main are, M-Pesa, Airtel Money, T-Kash formerly Orange Money.

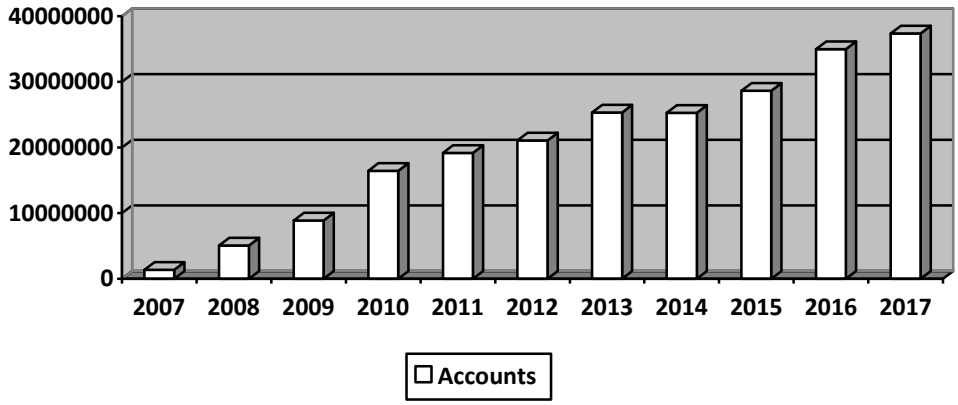
According to the 2016 figures, Kenya had 29.1 million registered mobile money accounts, with a 62.4% penetration rate. The country's mobile money distribution network is quite extensive with 146.7 thousand agents scattered all over the country. In Kenya, a country were mobile money is quite relied upon, multiple transactions are made every day. The 2016 figures show us that the volume of transactions made over the year reached 1.3 billion, the highest in sub-Saharan Africa. In addition to the large number of transactions, Mobile money is very lucrative for providers. In 2016 for example, M-Peas accounted for 21% of Safaricom total revenues. (Safaricom, 2017). Overall, the value of all transactions made in 2016 in Kenya was $33.5 billion. Those figures show not only the use but also the massive value generated in the mobile money industry in Kenya.

Figure 1: Evolution of the number of mobile money agents in Kenya



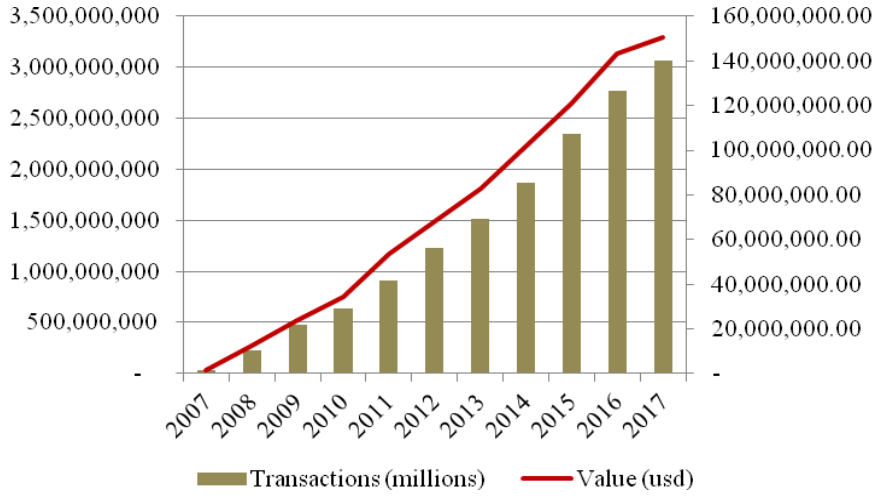
Source: Central Bank of Kenya

Figure 2: Evolution of the number of registered users in Kenya



Source: Central Bank of Kenya

Figure 3: Evolution of mobile money transactions volume and transaction value in Kenya



Source: Central Bank of Kenya

3.1.1. Regulation

The National Payment Systems Regulations (NPS) were created in 2014 to give Kenya a formal regulatory framework for its mobile money activity (Muthiora, B., 2014[28]). Before this, the Central Bank of Kenya (CBK) monitored the mobile money activity through letters of no-objection (Muthiora, B., 2014[28]). In a financial sector where mobile money was a new player, the NPS

regulations provided legitimacy, certainty in the market, confidentiality of customer data, etc (Muthiora, B., 2014[28]). In Kenya, the CBK has implemented a regulatory environment in which banks and MNOs are allowed to issue mobile money services. The funds issued from mobile money activity must be kept by banks that do not have the permission of lending or invest such funds (Muthiora, B., 2014[28]). Important key points of the regulatory code of conduct are:

- **Ring fencing and safeguarding of funds:** Funds collected must be kept across strong-rated regulated banks (Muthiora, B., 2014[28]). This measure has the goal to reduce risks against external financial shocks that may affect a financial institution.
- **Risk management:** Mobile money providers must comply with international standards such as the BIS Committee on Payments and Settlement Systems, in addition to local standard that the CBK put in place (Muthiora, B., 2014[28]).
- **Non-Exclusive dealing with agents:** Agent has the right to sell mobile money from different providers and is not locking down by a contract with just one of them. The NPS thereby encourage more agents into the industry and therefore increase the accessibility of the technology.
- **Interoperability:** The NPS regulations vows to reduce barriers to transactions across different mobile money deployments. According to GSMA, interoperability of mobile money schemes has the potential of further increasing financial inclusion.

Kenya's regulatory framework has been supportive of mobile money, encouraging cooperation among issuers and develop better competition and innovation (Muthiora, B., 2014[28]).

3.1.2. Services and Innovation

Kenya is an advanced country in terms of mobile money, therefore its industry offers a large array of mobile money products. Safaricom has developed the most comprehensive and sophisticated mobile money deployment in the world, consequently owns the most product in Kenya. Some of the most innovative products are:

Pay Bills: Through the M-Pesa service, the customer can pay his bills, from utility to rent. Safaricom partners with various housing agencies and allows them to collect rent money from their customers through mobile phone.

Pay schools fees: M-Pesa, through its product Lipa Karo also allows schools to collect fees and tuition through the mobile phone. Schools have the option to register to the service to be able to use the functionality. Once registered, they are assigned a business number to which student will send the fees.

Raising money: Changa na M-Pesa is an option of M-Pesa that allows registered users to raise money for exceptional occurrences such as for medical reasons, education, weddings, funeral, charity, etc (Safaricom, n.d.). User can rent the service for a short time and will receive a special number to hold donation money.

Government services: In many countries of Africa, in order to pay for a government service people have to go to the office and wait long hours in queues. The service offers convenience as it allows mobile money users to pay for driving license, immigration documents and even pay to register a business.

Loans and savings: M-Pesa gives the opportunity to its registered customers to access loans and holds a saving account. The KCB M-Pesa account offers attractive low interest rates on loans, as low as $0.5 to as much as ten thousand dollars. Users can also hold either a fixed saving, to lock a specific amount, or a target saving account, in order achieve a specific target thanks to attractive interest rates.

Section 2. THE CASE OF GHANA

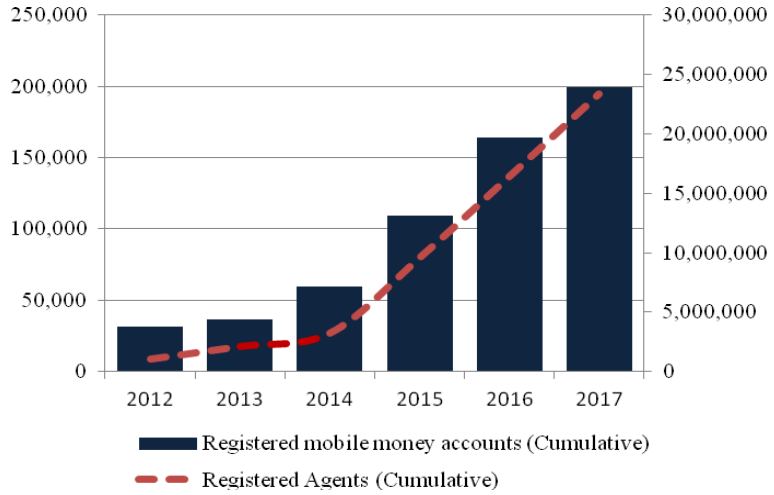
Ghana is a country of the western coast of the African continent. According the Ghana Statistical Service, the country has an estimated population of 28,3 million inhabitants in 2016. Ghana has many local dialects but the official language of the country is English. Between 2012 and 2016 the country has recorded an average annual GDP growth of 5.6%. In 2016 according to the IMF, Ghana was the 11th biggest economy of Africa.

Two years after the successful launch of M-Pesa in Kenya by Safaricom, MTN decided to follow its Kenyan counterpart to launch a mobile money service in Ghana. MTN is one of the biggest telecommunications company in Africa, headquartered in South Africa and present in 24 countries in the continent. MTN is one of the MNOs providing mobile money services in Ghana. In 2018, MTN alongside two others MNOs, Vodafone, Airtel Tigo, were the only three providers of mobile money in Ghana.

According to the 2016 figures, there were 19.7 million registered users of mobile money in Ghana, with one of the highest penetration rate of the technology in Africa with 69.6% (GSMA, 2017[5]). The country's agent network was quite large with 136.7 thousands agents deployed across the country. This large network of agents allows the technology to spread and penetrate easily remote rural areas. Mobile money was relied upon quite extensively in 2016. In fact, the volume of transactions that year reached 550.2 millions. The total of those transactions were valued at $15.7 billion.

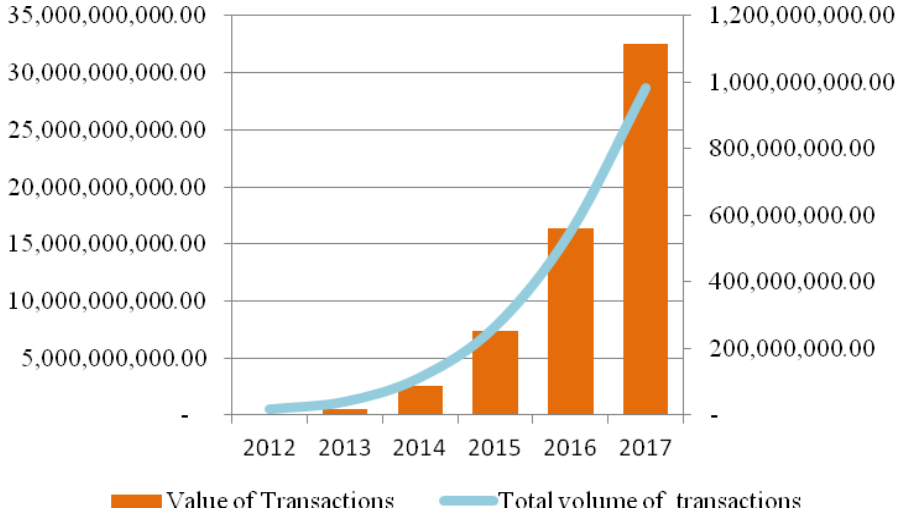
Mobile money is a big success for local MNOs providing the technology in Ghana, especially for the market leader MTN. As an example, MTN Ghana has opened a historic Initial Public Offering (IPO) hoping to raise as much as $743 million in capital (Oladehinde, D. & Ani, M.,2018[29]). But the particularity of this IPO is that it is the first ever IPO on any stock market in the world which shares can be purchased through mobile money (Oladehinde, D. & Ani, M.,2018[29]).

Figure 4: Evolution of registered mobile money users and agents in Ghana



Source: Bank of Ghana

Figure 5: Evolution of transactions volume and value of mobile money in Ghana



Source: Bank of Ghana

3.2.1. Regulation

The regulatory framework of mobile money has significantly changed in 2015. When the technology was introduced in the country, knowledge about it was limited. The Bank of Ghana

thought that building a regulatory framework involving both banks and MNOs could be beneficial to the hatching of the mobile money industry. Unfortunately, under this model, mobile money could not evolve. In fact banks did not see at the time how the technology would benefit them. They were unwilling to make the necessary steps in order to serve low income people, preferring doing business with regular income and large institutional customers (Muthiora, B., 2015[30]). That situation led MNOs to take the lead and operate the whole supply chain of mobile money. However, they were not in compliance with the existing regulations, reason why their business could not progress (Muthiora, B., 2015[30]). The potential of mobile money now evident, the Central Bank of Ghana was obliged to reform its framework to allow MNOs to participate in reducing financial exclusion in the country. Some key highlights of the 2015 reform are:

- The abolition partnership with bank, giving freedom to MNOs to operate as they see fit
- Permitting specific account structure and transaction limits that allows individuals with no identification to be financially included (Muthiora, B., 2015[30]).
- Creating security, compliance and consumer protection provisions to protect users (Muthiora, B., 2015[30])

The new regulatory framework enabled MNOs to innovate and reach more unbanked.

3.2.2. Services and Innovation

Like in Kenya, the top provider of mobile money in the country offers larger array of services and products. MTN goes beyond the traditional money transfers service offered by its competitors. In addition of the basic services, mobile money in Ghana accounts loans and savings accounts, insurance, bill payments, bank operations, etc. In 2018, MTN has announced introducing ATM machines for mobile money users. An example of the constant innovation in this market is the aim to increase convenience and attract more people into the formal financial sector.

Section 3. THE CASE OF CÔTE D'IVOIRE

Côte d'Ivoire is a country located is on the western coast of the African continent. According to the World Bank, the population of the country was estimated at 23.7 million inhabitants in 2016. The official language is French, but over sixty different local languages exist across the country. The country is the world's largest producer and exporter cocoa beans, supplying 33% of the global output (Ndianaefo,M., n.d.[31]). After the socio political crisis of 2011, the economy over the past five years have been steadily recovering, with the country averaging a 9.2% GDP growth rate according to the World Bank.

Mobile money was first introduced in December 2008 in Côte d'Ivoire by the French telecommunication giant Orange. According to the national Authority of Regulation of Telecommunications in Côte d'Ivoire (ARTCI), three MNOs control the essential of mobile phone market. Orange is the market leader with 42% of the market, followed by MTN with 34% of registered users and MOOV with 24%. Having introduced the technology in the country, Orange also is also the market leader in terms of mobile money, with 54% of registered users. Orange is trailed by MTN, 34% of mobile money users, and by MOOV which provides the technology to 12% of the population.

The mobile money industry has started showing its potential in Côte d'Ivoire after the end of the socio political crisis. This shows that the mobile money industry is also affected by the conditions of the market (Scharwatt, C., 2014[32]).

In 2016, the number of registered users of mobile money was 12.8 million in Côte d'Ivoire, which represent a 54% penetration rate. The MNOs agent network was just comprised of 40.1 million agents scattered around the country. Although the Côte d'Ivoire market is growing, adoption of mobile money still trails markets like Ghana. Mobile money transactions reached 278.5 million, and were valued at $9.8 billion. Those smaller numbers when compared to mature economies such as Kenya and Ghana in terms of mobile money, reveals a timid adoption. A CGAP study reveals that

more than 50% of accounts of inactive (Oulai, R., Lonie, S., Martinez, M., Tullis, C., 2015[33]). The study shows the reasons for that high inactivity is due to high costs, little access to agents and income irregularity (Oulai, R., et al, 2015[33]).

Table 1: Mobile Money figures in Côte d'Ivoire (2016)

Registered users	12,845,970
Registered Agents	40,149
Volume of transactions	278,545,141
Value of transactions	8,862,084,000

Source: BCEAO

3.3.1. Regulation

The regulatory framework in Côte d'Ivoire has evolved since the technology was first introduced in the country. The industry is regulated by the central bank (BCEAO[2]), at the regional, and the ARTCI[3] and the national level. Initially, the regulation only permitted banks-MNOs partnerships in order to issue mobile money. After reforms, capable MNOs were given the accreditation to issue the electronic money on their own. Some key aspects of the regulation of mobile money include prudential measures. In order to issue, non-financial institutions have to have an initial capital of at least $500 thousand, with this amount by met only by own funds and client deposits (Meagher, P., 2017[34]). In addition to that, non-financial institutions must have at least 3% equity of outstanding mobile money issued (Meagher, P., 2017[34]).

3.3.2. Services and innovation

Orange and MTN possess 88% of the registered users of mobile money in Côte d'Ivoire. Therefore, they also lead as far as mobile money services and products offered. Some key products

[2] Banque Centrale des Etats de l'Afrique de l'Ouest. It is the Central bank of the countries members of the West African Economic and Monetary Union (WAEMU)

[3] Autorité de Régulation des Télécommunications de Côte d'Ivoire. It is the regulatory body of telecomunications in Côte d'Ivoire

offered are:

- Sending money
- Buying airtime
- Pay bills
- Insurance

However, unlike Ghana and Kenya, the Côte d'Ivoire market still lacks in innovation. Interoperability is still impossible and basic services such as loans are still not available.

CHAPTER 4. COMPARATIVE DATA ANALYSIS OF MOBILE MONEY SERVICES IN KENYA GHANA COTE DIVOIRE

INTRODUCTION

The objective of this chapter is to describe the research methods utilized for this study. This chapter will aim to define the research design, identify the population of the study, and explain the methods of data collection as well as the methods of data analysis.

Section 1. RESEARCH METHODOLOGY

The research method that will be used in this study will be a multiple studies analysis. A case study research method is a methodological approach to analyzing past studies about a specific topic, in a specific context. In general, case studies tend to explore real-life phenomenon by performing a precise analysis of events and the relationships between them (Zainal, Z., 2007[35]). In *Case Study Research Design and methods, 1984*, Yin Robert defines the case study "as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (Yin, R.K., 1984. as cited in Schell, C. [The Value of the Case Study as a Research Strategy], 1992[36]). The case study research can be considered an adequate method when an in-depth investigation is required (Schell, C., 1992[36]). This widely used method come as a necessary tool to analyze social and behavioral issues, which may be difficult to be understood by traditional quantitative approaches (Zainal, Z., 2007[35]). This research method has been applied in diverse fields, ranging from education, law, medicine, sociology, etc. The need to assess through mere observation is important for those fields as more aspects of the issue can be revealed.

The population of this study will be mobile money registered users in Kenya and in Ghana. Mobile money has faced tremendous adoption in those two countries. This large adoption has led to the populations from both countries to increasingly be part of the formal financial sector, and

sparked innovation in the sector as well. Both countries possess a thriving mobile money market, however they presents many differences in terms of geographical positioning, economies, population, etc. The research will attempt to analyze various aspects of each country's mobile money market to determine what factors contribute to the success of the technology. The analysis of the users of mobile money in Kenya and Ghana will allow casting some lights on how or if other countries such as Côte d'Ivoire will be able to develop a successful market for mobile financial services.

In conducting this research, the researcher recognizes that qualitative study of this nature cannot be carried out without first looking into data sources. According to (Saunders, Lewis et al. 2009) "data is a fact, opinion and statistics that have been collected and recorded together for reference or for analysis" (Saunders, Lewis et al., 2009. as cited in Saliu, I., [Assessing the impact of mobile money transfer service on the socioeconomic status of the mobile money vendors: case of Kumasi metropolis.], 2015[37]). Therefore we are going to conduct our data collection by regrouping facts and opinions, main from multiple case studies and from researches.

The analysis of the collected data will be done by comparison with existing hypothesis surrounding the studied issues. In fact, several MNOs have unsuccessfully attempted to develop mobile money services in other countries under some assumptions that equated success according to them. MNOs often try to duplicate a model that proved it to be successful in one country, in any other country. Some assumptions may be verified, some not. The research will collect those assumptions through the multiple case study models and compare them with the result of the analysis. This result will help us identify the key success factors of mobile money technology in sub-Saharan Africa, as well allow us to provide recommendations for countries like Côte d`Ivoire.

This section aims to analyze and interpret the collected researches and articles about which common factors influences mobile money success. Multiples studies will be compared and relevant success factors will be identified. The studies collected identified three important factors influencing the performance of mobile money industry:

1. The country related factors

2. The mobile money service related factors

3. The Mobile Network Operator related factors

Section 2. COUNTRY-RELATED FACTORS

4.2.1. Enabling regulatory environment

The most common factor relevant to success of the mobile money industry is operating in the right regulatory environment. Lal, R., Sachdev, I. (2015[38]) supports this idea by outlining the importance of building an effective working relationship with the regulatory body. There may be more than one regulator, most of the time the body overseeing the financial sector. The closer the relationship between providers and regulators the better the mobile money deployment can grow and reach more people. Lal, R., Sachdev, I. (2015[38]) also states that this relationship could also help regulators ensure that they are actually facilitating rather than hindering the development of mobile financial services. The GSMA adds that regulators should create an open field for banks and non-banks to facilitate the development of financial inclusion, spark competition and innovation as well as attract investments (GSMA, 2016[39]). An analysis from GSMA in 2012 also showed that out of 14 fast growing mobile money deployments at the time, 12 were in countries that allowed MNOs to issue the service (GSMA, 2016[39]). The study also found that:

- Enabling the adequate regulatory environment facilitate greater transaction volume

- Proportion of active users are 2.2% higher than in restricted regulatory environments.

The study from the University of Chicago tells us that out of 9 countries where mobile money failed, 8 had restricting regulations (Evans, D. S., Pirchio, A., 2015[40]).

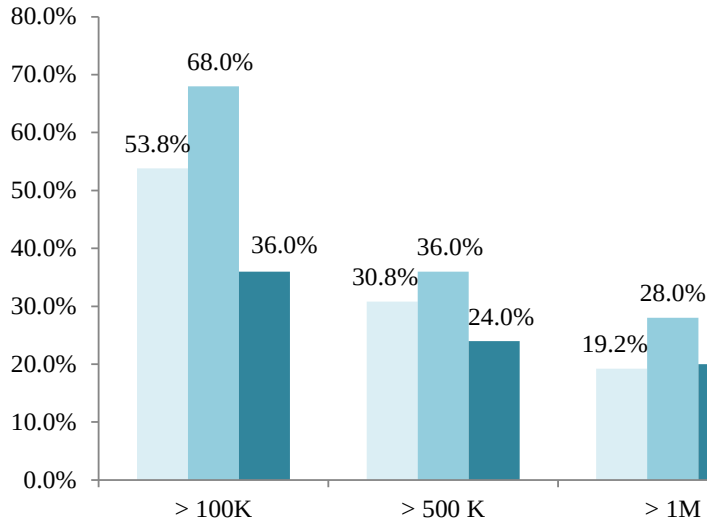
4.2.2. High Ease of Doing Business Index (World Bank)

The Doing Business Index from the World Bank assesses the ease of operating a business in a given country. GSMA has found a correlation between the index and the success of mobile money initiatives. The study reveals that more a higher percentage of active users in countries *which rank above the median* of the index. The higher the ranking, the easier it is for any companies to start and operates their business. As well as the easier it is to operate a mobile money business, the higher the probability of having engaged mobile money customers. This supports the idea according to which enabling regulations facilitate mobile money adoption.

4.2.3. Medium level of financial account ownership

GSMA also reveals a relationship financial account ownership and mobile money success. The study indicates that in countries in which financial account ownership is high, mobile money has experienced a small demand (GSMA, 2016[39]). In countries where account ownership is low, factors such as regulation or lack of infrastructure prevent the development of mobile money (GSMA, 2016[39]). However, in countries with medium level of financial account ownership mobile records the most active users. Naturally, in a country where banks have reached most of the population mobile money will have difficulties in developing properly since there is no real need.

Figure 6: Distribution of active mobile money accounts by level of formal financial account ownership (Y axis % of mobile money services for each financial account ownership category X axis: Number of active mobile money accounts (thousands)



Source: *Success factors for mobile money services: a quantitative assessment of success factors, GSMA (2016[39])*

4.2.4. Low GDP per capita and population density

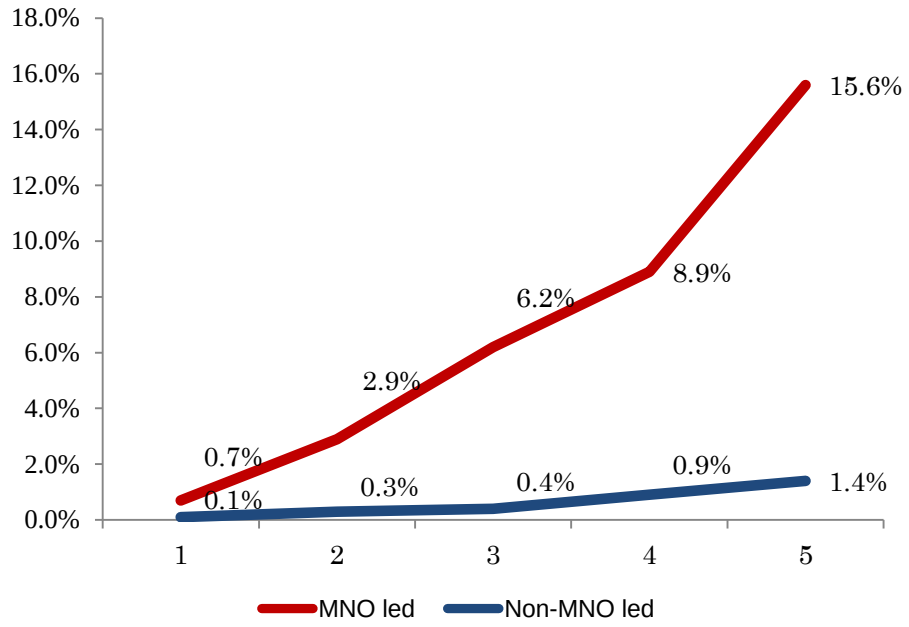
GSMA reveals that countries with low standard of living, measured by the GDP per capita, have experienced better mobile money success. This shows the relationship between poor countries in levels of financial inclusion. In addition, the study explains that country with high population density may experience better successes in mobile money adoption.

MOBILE MONEY SERVICE-RELATED FACTORS

4.2.5. MNO-led business model

The business model of the mobile money scheme is found to have impact on the adoption level of the technology. According to a GSMA study, MNO-led schemes have been more able to deliver financial inclusion in sub-Saharan Africa. The study compared the evolution of deployments within the third year of launch of the mobile money service for both MNO-led and Bank-led. By the fifth year of launch, services launched by MNO obtained 635 000 active users compared to only 165 000 for bank-led model. Banks never succeeded in reaching financially excluded people because they do not own the channels to do so. On the other hands MNOs have been able to reach people in remote areas by their network for mobile phone technology. Therefore they have used the same network in order to make their mobile money operations successful. Banks had the wrong idea according to which making a mobile money service will have them access more people.

Figure 7: Growth of average mobile money transaction value for MNO- and non MNO-led services



Source: *Success factors for mobile money services: a quantitative assessment of success factors, GSMA (2016[39])*

4.2.6. Efficient agent network

As previously seen, one of the advantages of MNOs in establishing a successful mobile money deployment was to have the adequate agent network. Lal, R., Sachdev, I. (2015[38]) support this idea by adding that, for a mobile money business to be successful the MNOs should create a balance between existing and new agents added to the network. An approach to grow the network is needed in the early days of launch (Lal, R., Sachdev, I., 2015[38]). It is important because the more agents available the more customers signed up to the service. But at the same time having too many agents around a same location can decrease the incentive of those agents to operates the mobile money business as profitability for them will decrease.

Davidson, N., Leishman, P. (2012[15]) add to that idea by outlining the importance for MNOs to

provide incentives for agents in order for mobile money services to be sustainable. MNO should focus on *analyzing the economics of the business of a typical agent* (Davidson, N., Leishman, P., 2012[15]) in order to define the commission structure for agents. That commission has to match the MNO ‘s financial goals (Davidson, N., Leishman, P., 2012[15]).

More agents means more people enrolled in the service but there are many factors to consider in order setting an efficient agent network.

Section 3. PROVIDER-RELATED FACTORS

4.3.1. Group-level advantage

A GSMA study found that mobile money providers who operate in multiple countries have achieved better success. The study shows that group-level providers had 50% more active users than providers operating in only one country (GSMA, 2016[39]). Also, the growth rate of mobile money deployment operated by group-level providers is significantly higher than single providers. In addition to that, market share is also a contributing factor. In fact, according to the same study, group-level providers had a higher market share than single providers. The larger the number of mobile connections, the larger the market share for mobile money. The GSMA study identified this factor as *the strongest and most stable predictor of success* (GSMA, 2016[39]).

Table 2: Type of provider comparison

	Single-service provider	**Group level providers**
Average number of mobile money active accounts (thousands)	272	406
Average market share	0.8%	2.9%
Average market share 1 year since launch	0.22%	0.60%

Average market share 3 years since launch	0.6%	2.3%
Average market share 5 years since launch	1.1%	3.9%

Source: *Success factors for mobile money services: a quantitative assessment of success factors, GSMA (2016[39])*

4.3.2. Trust

Obtaining the trust of customers is important for any business. The same has been identified by (Lal, R., Sachdev, I., 2015[38]) in a study where the importance of several aspect of trust is highlighted. Trust in the mobile money service, as well as trust in the provider of the service for customer to be comfortable for transacting their money, trust in the technology for reliability and quality service, and trust in agents to handle money (Lal, R., Sachdev, I., 2015[38]).

If trust is not achieved at those different level, mobile money deployment cannot be successful. Generally large MNOs get this trust from the general public. This may explain why it is easier for them to build a successful mobile money scheme compared to smaller and more localized MNOs.

Table 3: Key success factors of mobile money services in sub-Saharan Africa

Key Success Factors	Brief Description	References
COUNTRY-RELATED FACTORS	**Specific factors related to the country in which the mobile money deployment is located.**	
Enabling regulatory environment	The regulations set by a country for mobile financial services will indicate whether the service will fail or succeed in that country	*Lal, R., Sachdev, I. (2015) GSMA (2016) Evans, D. S., Pirchio, A. (2015)*
High Ease of business Index	The easier it is to operate a business in a country the more likely mobile money schemes will be successful	*GSMA (2016)*
Medium level of financial account ownership	Countries with high rates of bank account ownership do won't be suitable for mobile money to grow. In the same time countries with extremely low level of bank account ownership might indicate lack of basic infrastructure. Countries with medium level of bank account ownership show better success for mobile money.	*GSMA (2016)*
Population density	Higher population density country might indicate a better network of agents to reach more potential customers	*GSMA (2016)*
Low GDP per capita	Mobile money is more successful in poorer nations in which most people cannot afford to have bank accounts	*GSMA (2016)*
MOBILE MONEY SERVICES- RELATED FACTORS	**Factors relative to the structure of the mobile money service itself as well as its business model**	
MNO Led	MNOs have been proven more successful in establishing mobile money services compared to banks.	*GSMA (2016)*
Efficient agent network	Agents are critical to the development of mobile money services. MNOs should know how to develop incentive in order to attract more agents to reach more people, while in the same time comply with their financial goals.	*Lal, R., Sachdev, I. (2015) Davidson, N., Leishman, P. (2012)*
PROVIDER-RELATED FACTORS	**Factors related to mobile money providers, the MNOs. Those factors show how important the operating mode of the MNO is for adoption of the service**	

Group-level advantage	MNOs that have operations in other countries tend to have more success in developing mobile money services in a new country.	*GSMA (2016)*
Existing mobile connection market share	MNOs that are dominant in a market tend to attract more customers compared to others providers.	*GSMA (2016)*
Trust	MNOs that have developed a successful relationship of trust with the public tend to have better adoption rate of mobile money services.	*Lal, R., Sachdev, I. (2015)*

CHAPTER 5. KEY SUCCESS FACTORS OF MOBILE MONEY AND IMPLICATIONS FOR THE CÔTE D'IVOIRE MARKET

Introduction

This chapter observes how the Côte d'Ivoire market for mobile money fares compared to the identified key success factors. This chapter will provide some comparison with other major markets in sub-Saharan Africa.

Section 1. REGULATORY ENVIRONMENT

The regulatory framework of Côte d'Ivoire is very supportive of the role of MNOs in the development of financial inclusion in the country. Many reforms have been made over the years to facilitate MNOs involvement in the financial sector. The regional central bank, the BCEAO, have been implementing the adequate framework to allow MNOs to operate freely in the country and offer more innovation to the sector.

However, in 2017 the central bank has urged Orange, the country dominant MNO, to stop its service for international transfers outside of the central bank's supervision, the West Africa region. The interdiction mainly targeted Orange transfers from the WAEMU[4] region towards the MNO's home country France. The central bank claimed having no visibility on international transactions made in foreign currency. On the other hand, in thriving mobile money market such as Kenya, regulation is fully supportive of all aspects of mobile money including international transfers.

Section 2. HIGH EASE OF BUSINESS INDEX

Côte d'Ivoire has been ranked 139 over 190 countries per the Doing Business ranking from the World Bank. Following on the GSMA study that identified the ranking as a factor of success of

[4] West African Economic and Monetary Union. The countries members of this union include Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo.

mobile money services, we identified compared mobile money penetration with the DB rank of some mobile money markets in sub-Saharan Africa. Compared to Kenya and Ghana, Côte d'Ivoire has a smallest ranking and therefore a smaller penetration of mobile money.

Table 4: Figure: A comparison of Doing Business Ranking with Mobile money penetration among some sub-Saharan African countries

Country	Doing Business Rank*	Mobile Money penetration
Kenya	80	72.9%
Uganda	122	50.6%
Ghana	120	38.9%
Tanzania	137	38.5%
Côte d'Ivoire	139	34.1%
Burkina Faso	148	33.0%
Cameroon	163	15.1%
Nigeria	145	5.6%

*****the smaller the number the higher the rank

Source: *Doing Business*

Section 3. FINANCIAL ACCOUNT OWNERSHIP

Low access to banking services and low level of account ownership were one of the reasons why Côte d'Ivoire had great adoption of mobile money services. However, we realized that some countries are more sensitive to these factors than others. In Kenya, 55% of adult own a bank account, a rate higher than in most part of sub-Saharan Africa. However this has not prevented the population to massively adopt mobile money services. Some countries may be more technology sensitive and having existing infrastructures help as a base for such a service.

Table 5: Access to banking services and account ownership

Country	Commercial bank branches per 100 000	Account at financial institution (2014)
Kenya	5.4	55%
Uganda	2.8	28%
Ghana	7.1	35%
Tanzania	2.5	19%
Côte d'Ivoire	5.1	15%
Burkina Faso	2.9	13%
Cameroon	2.0	11%
Nigeria	5.4	44%

Source: Little Data Book on Financial Inclusion, World Bank[41]

Section 4. GDP PER CAPITA AND POPULATION DENSITY

Like other developing countries in sub-Saharan Africa, Côte d'Ivoire has a low GDP per capita. We can safely say that this factor was part of the development of mobile financial services in the country. The country possesses almost the same level of GDP per capita compared to Kenya and Ghana. Understanding that the factors of adoption of the technology are a bundle of complex elements specific to each country, we cannot affirm that GDP per capita was the most important factor of success. The same thing goes for population density. For instance Nigeria, another lower-to-middle income economy of West Africa, has 8 times the population of Côte d'Ivoire but with only a 5.4% adoption of mobile money.

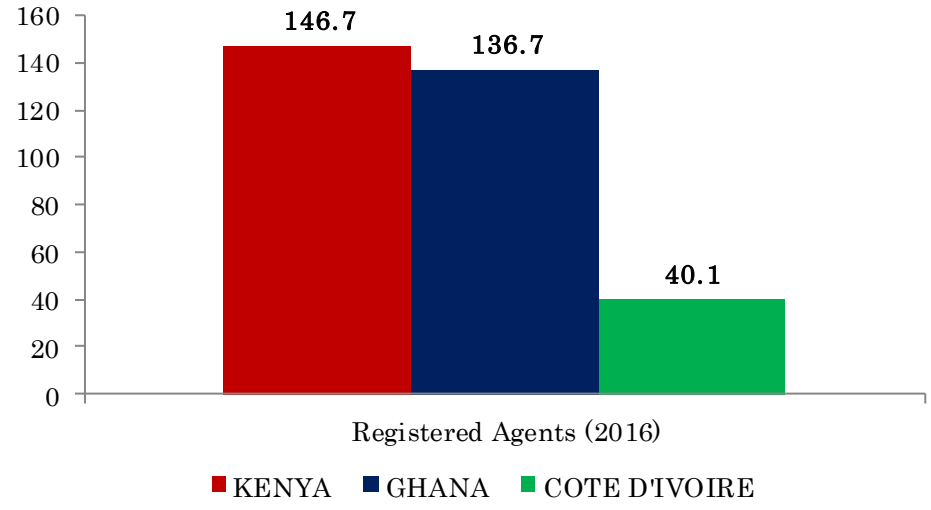
Section 5. MNO-LED MOBILE MONEY SCHEME

In Côte d'Ivoire there are two majors providers of mobile money, which are Orange and MTN. They respectively entered the mobile money market in 2008 and 2009 and have experienced tremendous successes. But at the time they entered the market, regulations obliged them to partner with a bank in order to operate electronic money transactions. They kept this model until 2016 when Orange acquired a certification from the central bank authorizing the MNO to manage all aspect of mobile money without the need of a banking partner. MTN acquired the same certification a year later. However, other providers such as MOOV CI are still required by regulation to operate through a partnership with a local bank.

Section 6. EFFICIENT AGENT NETWORK

The study has highlighted the importance of developing an efficient network of agents for the distribution of mobile money. Côte d'Ivoire is still behind as far as agent deployment throughout the country compared to Ghana or Kenya for instance. In 2016, Kenya had more than 146 000 agents distributing the technology in the country. The same year, Ghana had more than 136 000 agents. Côte d'Ivoire had only 40 000 agents. This may highlight the difficulty for MNOs to attract new agents to the already existing network. Moreover, it may show that incentives to bring in and keep agents are not as attractive as in Ghana and Kenya.

Figure 8: Registered agents 2016, in thousands



Source: BCEAO, Central Bank of Kenya, Bank of Ghana

Section 7. GROUP-LEVEL PROVIDERS

In Côte d'Ivoire, except the third provider of mobile money MOOV, providers have a high experience curve through involvement in multiple countries. Orange is providing mobile financial services in 16 countries in on the African continent. MTN is operating in 15 countries in Africa.

Section 8. EXISTING MOBILE NETWORK MARKET SHARE AND TRUST

This rule applies in almost every country. For MNOs, market share of mobile connection has a high correlation with number of registered accounts. In Côte d'Ivoire Orange and MTN, respectively number one and two, dominate the market for mobile connectivity. Consequently, the same MNOs possess the essential of the mobile money market in the country. The same is observed in Kenya with Safaricom and in Ghana with MTN Ghana. Having such local and international notoriety, it was easier for Orange and MTN to register customers to their mobile money services. They had already established trust with their customers, who led them to entrust their funds to their mobile

providers. However, trust can be enhanced by providing a better customer service for example.

Section 9. IMPLICATIONS: IMPROVING THE CÔTE D'IVOIRE MOBILE MONEY ECOSYSTEM

Introduction

Côte d'Ivoire has an emerging and growing market for mobile money services. However, the country still trails others such as its neighbor Ghana or the mobile money pioneer Kenya. This section will attempt to provide recommendations on how Côte d'Ivoire could increase its financial inclusion through a more efficient mobile money industry.

Table 6: Comparison of mobile money services in Côte d'Ivoire, Ghana and Kenya

	CÔTE D'IVOIRE	GHANA	KENYA
SEND MONEY	YES	YES	YES
	Sending and receiving money is the basic mobile money product. The three countries naturally offer the service		
INTERNATIONAL TRANSFERS	NO	YES	YES
	In Côte d'Ivoire, the central bank prevents any mobile money transfer in foreign currency	In Ghana and Kenya, users have the ability of sending money outside of the country, as regulation permits.	
BUY AIRTIME	YES	YES	YES
	Buying airtime directly from the mobile money account is one of the most used products in sub-Saharan Africa. The user is able to recharge his mobile network call time without having to step outside. This service is available in the Ghana, Côte d'Ivoire and Kenya markets.		
PAY BILLS	YES	YES	YES
	Users can skip the long lines and directly pay for water and electricity bills from their mobile phone. In Côte d'Ivoire, 98% of the school fees were paid through mobile money in 2015.		
ATM WITHDRAWAL	YES	YES	YES
	Mobile money ATM withdrawal exists through various partnerships between MNOs and banks. Although being available in the three countries, the service is more commonly used in Kenya and Ghana than in Côte d'Ivoire.		
INTEROPERABILITY	NO	YES	YES
	Performing mobile money transactions from one MNO to another is impossible.	Ghana and Kenya just recently designed a framework that would allow mobile money schemes to be cross-compatible.	

	Regulators and players intend to find a framework that will benefit all the stakeholders.		
LOANS	**NO**	**YES**	**YES**
	In Côte d'Ivoire mobile money users do not have yet access to loans through the mobile money service.	Mobile money users have access to loans at low interests thanks to partnerships between microfinance institution or banks and MNOs.	

Table 7: Evaluation of the mobile money market for Côte d'Ivoire, Ghana and Kenya

Country	Côte d'Ivoire	Ghana	Kenya
Regulation	Supportive with some restrictions	Fully supportive of mobile money services	Fully supportive of mobile money services
Mobile money penetration (2017)	34.1%	38.9%	72.9%
Value transaction (in billion USD)	$9.80	$15.70	$33.50
Population	23,695,919	28,206,728	48,461,567
GDP per capita (in USD)	1535	1513.5	1455.4
Evaluation of market	**MATURING**	**MATURE**	**MATURE**

Source: World Bank

Improving the regulatory environment of mobile money services

Côte d'Ivoire has taken the necessary steps to build a suitable regulatory environment for its mobile money services. The technology is growing and attracting more customers each year. Despite the regulations set in place some problems still exist such as the case of the BCEAO blocking the international mobile money transfers of MNOs in the country. This might be the doing of the "invisible hand" of the banking system, which is under the pressure from MNOs offering better service packages to their customers. The central bank should realize the positive impact of the free flow of international mobile money transfers on the economy over the long run. Instead of banning

the practice, the regulator can create policies in order to increase supervision.

Utility

In Côte d'Ivoire the use of mobile money services is not very varied across the offered products. Users focus on sending money and paying for airtime when the potential of the technology is important. The need to market the utility of mobile money, in urban and rural areas, is a key to its development. The local government, with the collaboration of the regulator and the MNOs, must undertake measures to promote the use of the services across the country. In addition to that, MNOs must analyze the use patterns of the service in Côte d'Ivoire. This will allow them to capitalize on the most important aspect of the technology from the perspective of local customers, instead of just creating new products. Today's most successful mobile money service, M-Pesa, was born out of observing how the consumer used the service, for it to be tailored according to the need of the population.

Competition and innovation

Mobile money has revealed itself for being a solution to develop financial inclusion in Côte d'Ivoire. Today, banks and MNOs are the sole players in the market, with MNOs being the more successful in general. However, the technology has to constantly evolve to include more people and to be more convenient for all. New players such as Fintech companies should be encouraged to provide the service in Côte d'Ivoire. This will create a situation of healthy competition in the market, where players will offer increasingly more innovative solutions. The benefits of such open field will be various. First it will benefit the existing customers with a better service; it will allow higher penetration with more people registering to mobile money services, thus increasing financial inclusion

Consumer protection

In every business perception is critical, especially in the financial sector. People must feel that

their money is secured before utilizing any financial tool. In general, the banking sector benefit from this trust from the public whereas mobile money is not yet clear for some people. Mobile money providers must make the consumers feel protected and naturally actually be protected. Today in Côte d'Ivoire, mobile money is usually for small transactions where the risk is minimal in the event of a fraud. As consumer protection increasingly become a priority, the feeling of security around mobile money services will increase thereby attracting more users.

Promoting interoperability

Interoperability is one of the most debated topics in the mobile money industry in Côte d'Ivoire. The general public demands it and MNOs are looking for ways to balance competition and interoperability. Interoperability will increase value of mobile money to the customer and accelerate the adoption and efficiency of the technology in the country. Some providers are hesitant in giving away control of their operations and are still looking for incentives. The regulators should develop a framework where financial inclusion comes before the interest of the players. However, interoperability will be naturally driven by the market needs. When the market will reach of state of maturity it will become inevitable. A mandatory interoperability could decrease innovation as providers will see less benefits to provide new solutions as they share their networks with their competitors (Bourreau,M.,Hoernig,S., 2016[42]). If the market is not yet mature, it can lead to the failure of mobile money services. Timing is crucial and interoperability of mobile money services should come naturally and not be forced. This will allow providers, at this stage, to retain their competitive advantage and continue to provide innovative solutions to lead the market to maturity.

Invest in agent training and incentives

The study highlighted the necessity of developing not only a large network of agents but also an efficient one. Côte d'Ivoire still trails the likes of Ghana and Kenya as far as its agent network. Agents are crucial to the development of mobile money services and MNOs in Côte d'Ivoire should increase the incentives to attract them. It is part of the promotion of the service itself where

customers and potential agents can see a benefit of using or operating the service for economic needs. MNOs focus should shift toward more investment in attracting and training more agents. Trained agents will convey the trust and safety perception around mobile money.

Table 8: Recommendations to improve the Côte d'Ivoire mobile money ecosystem

<table>
<tr><th><u>FOR THE GOVERNEMENT</u></th><th><u>FOR THE MNOS</u></th></tr>
<tr><td>Improving the regulatory environment of mobile money services
Instead of banning the practice, the regulator can create policies in order to increase supervision</td><td>Perceived Utility
Capitalize on the most important aspect of the technology from the perspective of local customers, instead of just creating new products.</td></tr>
<tr><td>Competition and innovation
Open field must be developed to include new players such as Fintechs</td><td>Customer Incentives
Offer competitive prices and promotions for the customers to find an incentive in the services. Also, create localized solutions, for example mobile money solution for farmers. This will drive people to use mobile money services.</td></tr>
<tr><td>Promoting interoperability
Allow the market situation to naturally lead to interoperability of mobile money services.</td><td>Agent training and incentives
MNOs focus should shift toward more investment in attracting and training more agents</td></tr>
<tr><td colspan="2">Education
Educate the population on how to use and benefit from the service. This should be the role of both government and MNOs</td></tr>
</table>

CHAPTER 6. CONCLUSION

The mobile money revolution has been one of the greatest technological successes in Africa and the world. Most of African countries are one the last to adopt any new technology, due to lack of human and financial resources. Financial inclusion has always been one of the major issues for African governments. Prior to mobile money, all initiative revolved around how to provide more resources and regulatory incentives for the banking sector to expand their reach and develop affordable options for the unbanked. However, in many ways, the banking sector has shown their limitations and inability to provide basic financial services to people who could not access financial services. In the light of these limitations, mobile network operators have stepped in the financial sector by offering a way of reaching unbanked population, including them in the formal financial sector, and thereby making them contribute to the development of their economy. The arrival of new players in the financial sector has brought not only competition where innovative products are offered, but also cooperation where finance and non-finance entities partner to provide new solutions. Despite the revolution, countries have experienced different adoption rates of mobile money. This situation revealed that there exist specific factors that facilitate the adoption of the technology in any given country of Africa. This study has found that in order to develop a successful mobile money ecosystem, factors at the country level, service-level itself and at the provider-level. Among all those factors of success, the regulatory framework that governs mobile money services will determine the success or failure of mobile money services in a country. Enabling regulations that invite many players into the financial sector allows innovative solutions for a greater financial inclusion. Regulators should see the benefit of an open field for banks and non-bank institutions to provide mobile money to populations. There exist many more challenges ahead, one of them being the issue of interoperability across mobile money schemes. Regulators and providers have to work together to in order to balance competition and interoperability, for the benefit of the customers.

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