Analysis of the necessary factors for the successful introduction of mobile money to Laos

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# Table of Contents

*List of Figures* ................................................................................................................................. 2  

*List of Tables* ................................................................................................................................. 3  

1. *Introduction* ................................................................................................................................. 4  

2. *Theoretical Background* ............................................................................................................... 6  
   2.1. Financial Inclusion ....................................................................................................................... 6  
   2.2. Mobile Money .............................................................................................................................. 7  
   2.3. Impacts of mobile money ........................................................................................................... 12  

3. *Country Analysis of Laos* ............................................................................................................. 17  
   3.1. Introduction of Laos .................................................................................................................... 17  
   3.2. PESTEL analysis ......................................................................................................................... 18  
   3.3. Mobile Money in Laos and around Southeast Asia ....................................................................... 21  

4. *Success Factors of Mobile Money* ............................................................................................... 24  
   4.1. Literature Review ....................................................................................................................... 24  
   4.2. Summarizing the road for success ............................................................................................ 26  
   4.3. Research Methodology ............................................................................................................. 30  

5. *Introduction of Mobile Money to Laos* ....................................................................................... 31  
   5.1. Statistical Analysis of the country-specific success factors ......................................................... 31  
      5.1.1. Data Collection and Variables used in the analysis ................................................................. 31  
      5.1.2. Preparations of the regression model .................................................................................... 36  
      5.1.3. Results of the model ............................................................................................................. 38  
      5.1.4. Interpretation of the model in Laos ...................................................................................... 40  
   5.2. Analysis of further, non-country-specific success factors .......................................................... 43  
      5.2.1. Mobile money usage around the world ................................................................................. 43  
      5.2.2. Comparison of 5 significant mobile money providers .......................................................... 45  
      5.2.3. Implications to Laos ............................................................................................................ 46  
   5.3. Questionnaire on the perception of mobile money in Laos ....................................................... 47  
      5.3.1. Demographic distribution of the respondents ....................................................................... 47  
      5.3.2. Perception of mobile money .................................................................................................. 49  
      5.3.3. Perceived usefulness of mobile money .................................................................................. 54  
      5.3.4. Restraining factors that affect mobile money adoption ..................................................... 56  
   5.4. Limitations of this study and further research opportunities ..................................................... 58  

6. *Conclusion* .................................................................................................................................... 60  

7. *References* ..................................................................................................................................... 62  

8. *Appendix* ....................................................................................................................................... 72
List of Figures

Figure 1: Financial Inclusion around the world ......................................................... 6
Figure 2: Mobile Money Services ............................................................................ 9
Figure 3: Archetypes of Mobile Money Providers ...................................................... 11
Figure 4: Mobile Money Transactions Worldwide .................................................... 13
Figure 5: Summary of the success factors of mobile money .................................... 29
Figure 6: Global total mobile money transactions in 2017 ....................................... 44
Figure 7: Number of Accounts and Agents in 2017 ................................................. 44
Figure 8: Demographic distribution of the respondents of the questionnaire .......... 48
Figure 9: Perception of Mobile Money in Laos ......................................................... 50
Figure 10: Perception of Mobile Banking in Laos ................................................... 51
Figure 11: Mobile Banking usage in Laos ................................................................. 54
Figure 12: Possible Mobile Money usage in Laos ..................................................... 55
Figure 13: Reasons for not wanting to use mobile money services ....................... 58
List of Tables

Table 1: Country Profile of Laos ................................................................. 17
Table 2 Summary of the PESTEL analysis of Laos ...................................... 18
Table 3: Financial Inclusion, mobile and internet penetration in SEA ............... 22
Table 4: Variables Used in the Statistical Analysis ........................................ 32
Table 5: Final Heteroskedasticity-corrected model ....................................... 39
Table 6: Values of the linear regression variables in Laos .............................. 40
Table 7: Domestic Remittances in Laos ....................................................... 41
Table 8: Mobile Money around the world in numbers .................................... 43
Table 9: Comparison of the non-country-specific factors ............................... 45
1. Introduction

“By 2030, 2 billion people who don't have a bank account today will be storing money and making payment with their phones. And by then, mobile money providers will be offering the full range of financial services, from interest-bearing savings accounts to credit to insurance.” (Bill Gates, 2015)

Poverty does not necessarily mean the lack of money, but also the exclusion from a plenty of other things, such as access to healthcare or to any other tools and instruments that can improve our lives. Financial services are also one of them, as they could be an enabler for growth and development; however, because of the huge fixed costs, banks can’t establish branches in the more remote areas, hence people end up involuntary excluded from these services, resulting in an even bigger inequality between the rich and the poor.

Fortunately, with new technological advancements, people even in the most isolated areas can have access to mobile devices and can have mobile subscriptions, leading to the evolvement of new digital alternatives in case of many of the services including financial ones as well. One of these really significant innovations is mobile money, that enables people to execute at least basic transactional financial services without a bank account on their mobile phones, and acts as a bridge towards a deeper financial inclusion, that Bill Gates has predicted in 2015.

The road towards the success of mobile money started in 2007, in Kenya, when Safaricom intended to create a service for the unbanked, initially thinking of a microfinance solution. During the research phase they found out that people who apply for a microcredit (mainly the breadwinner, who moved to an urban area, most of the time to Nairobi) sent a portion of the earned money by public transport to rural areas (for their family members who stayed at home) hundreds of kilometers away. By identifying the biggest financial challenge in Kenya, they came up with a solution, M-PESA, that allows people to convert cash into electronic funds that securely sit on their SIM cards and can be sent anytime to their family through USSD codes and SMS solutions. They also installed a broad network of agents to serve as a “branch” for the users. (Michael, 2017) Since then mobile money services are available in 90 countries with 276 deployments and 690 registered users, serving as a bridge especially to people at the BoP to access financial services and eventually contributing to extreme poverty reduction. (GSMA, 2018a)
The success is the most visible in Sub-Saharan Africa, especially in Eastern Africa, like Kenya or Uganda, where there are countries with more mobile money users than financial account owners. Although there are areas in the world - even more developed ones than Sub-Saharan Africa - where financial inclusion is still really low, most of the people don’t have any access to financial services, not even to basic transactional ones.

One of these areas is Southeast Asia, where besides Thailand, Malaysia and Singapore, that are more developed than the other countries in the region, account ownership is well below 50%; in the least developed countries it is between 20-30%. Although mobile money is already presented in the region it did not have a big breakthrough or a significant impact yet, only a few percent of the population use it. There is one country, Laos, with an account ownership of 29%, where - in spite of the low level of access to financial services - mobile money has not yet been introduced, however now the government together with the help of the UNCDF started to promote financial inclusion and eased the regulatory burdens (UNCD, 2018b), meaning that already one of the mobile network operators is preparing the introduction of mobile money. (UNCDF, 2017a)

In my thesis, I am going to examine the question that: What factors are necessary for the successful introduction of mobile money to Laos? To answer the question, first I am going to introduce the theoretical background of mobile money by clarifying the definition, showing its relation to financial inclusion, analyzing the ecosystem it belongs to and demonstrating its impacts globally. Secondly, I am going to introduce Laos and examine the country with the help of a PESTEL analysis, and I am also going to explore the current mobile money solutions in the region. Finally, I am going to include a literature review on the already published analyses about the success of mobile money. Based on the studies, after identifying all the success factors, I am going to do a statistical analysis by creating a multiple linear regression model of the external success factors; a comparison of some further factors of 5 of the most significant mobile money deployments around the world; and an analysis of a questionnaire conducted with people from Laos on the perception of mobile money, in order to answer my research question about the successful introduction of mobile money to Laos.
2. Theoretical Background

2.1. Financial Inclusion

Financial inclusion means access to affordable and useful financial services by individuals and businesses delivered in a sustainable way. These products or services can be payments, transactions, savings, credits or insurances. A transaction account is a gateway to other financial services because the person who holds it is more willing to turn to another financial solution, like applying for a loan, in case of an emergency. (World Bank, 2018a)

Financial inclusion is measured the most comprehensively by the World Bank, who publishes every 3 years - since 2011 - the Global Findex Database. It measures 776 different indicators around the world in connection with financial inclusion. The first and most important one is account ownership, which means the percentage of the respondents who have an account at a bank, microfinance institution (MFI) or any other formal financial institution, or who have used mobile money in the last 12 months. (Demirguc-Kunt et al., 2018)

In 2017 1,7 billion people were still unbanked in the world. 69% of the adult population had an account, increasing from 62% in 2014 and 51% in 2011. This means 63% in developing economies and 94% in high-income economies and a 515 million additional people, who have opened an account (trough a financial institution or mobile money provider) between 2014-2017. (Demirguc-Kunt et al., 2018)

![Figure 1: Financial Inclusion around the world](Image)

Source: Own Illustration, based on World Bank, 2018b
Financial Inclusion matters because according to the World Bank a higher level of financial inclusion could be the enabler of 7 out of the 19 Sustainable Development Goals, and also it could contribute to extreme poverty reduction. Hence, they have set up a target of Universal Financial Access by reaching 1 billion unbanked people in the world until 2020. (World Bank, 2018a)

There are many factors that currently hinder financial inclusion; a whole ecosystem is needed, such as the adequate financial and technological infrastructure, the enabling regulatory environment, and the availability of appropriate financial tools and market incentives. One phenomenon is true for all the developing markets, the distribution cost for traditional financial service models are too high. Unfortunately, banks with physical branches can’t reach low-income people, who live in rural, sparsely populated areas. Also, the financially excluded has no formal access to credit, therefore they don’t have a credit history. Technology is the enabler for opening towards the bottom of the pyramid population by overcoming these physical barriers and including more and more people into the financial ecosystem. (Costa – Ehrbeck, 2015)

Another term, Digital Financial Inclusion can be defined as a digital access to formal financial services by the financially excluded and underbanked population, in an affordable and useful way for the customers, and a sustainable way for the providers. It means offering a transaction account in order to make payments, transfer or store money on a mobile device, on a payment card, or on a Point-of-sales terminal (POS) by a full-service bank, a limited service niche bank, a mobile network operator (MNO) e-money issuer or a nonbank non-MNO e-money issuer. (Lauer – Lyman, 2015)

2.2. Mobile Money

Providing the most basic definition, mobile money is the provision of financial services using a mobile device. (Donovan, 2012) It is the part of a broader concept, e-money, that basically means the electronic alternative to cash, which - in addition to the use of a mobile phone - can mean the payments made using other tools, such as debit and credit cards, prepaid cards, ATM cards and near-field communication (NFC) –enabled cards. (IFC, 2011) We have already met the definition of DFS, which is really close to mobile money, however, it does not mean services through mobile phones only. Another concept that is important to mention is Mobile Financial Services (MFS), that are financial services on a mobile phone including mobile money; however, it is a broader concept,
meaning non-transactional services as well, such as credits and insurances on mobile phones. (Shulist, 2014)

GSMA - who represents the interest of the mobile operators all over the world, including 750 operators and 350 other companies in the broader mobile ecosystem - creates the most extensive reports about mobile money globally. (GSMA, 2018a) It publishes an Excel file, called the Mobile Money Deployment tracker, refreshed frequently with all the available mobile money deployments broken down by countries worldwide. (GSMA, 2018s) The World Bank’s Global Financial Inclusion database builds on this file as well; in their surveys, they ask the respondents whether they have used one of the mobile money providers listed in the Deployment Tracker at their country in the last 12 months. (Demirguc-Kunt et al, 2018) Mobile money deployments are required to meet the following criteria in order to be included in the Tracker:

1. It must offer services to the unbanked. (People who can’t access to formal financial services).
2. It must offer at least one of the following services:
   a) Money transfer (domestic or international)
   b) Mobile payment, such as merchant payment, bill payment or bulk disbursement
   c) Storage of value.
3. It must provide an interface on the mobile devices, where agents and customers can initiate transactions.
4. It should be accessible for everyone; hence it must provide a network of physical transactional points beyond ATMs and bank branches.
5. Deriving from all of the above requirements, mobile banking services that use the mobile phone only for another channel to provide traditional banking services are excluded.
6. Also, online wallets, like Google Wallet or Apple Pay are not included, because they are payment services linked to a bank account without offering services to the unbanked. (GSMA, 2018c)

From now on I will use the term mobile money according to the above definition and criteria.
To fully understand mobile money, we have to talk about the different services, customers can make. They can be seen on the following figure with their monthly values an average customer moves per month.

As we saw, credits, insurances and other services are additional services of mobile money service providers, meaning a deeper level of financial inclusion. The main services of mobile money are P2P transfers, cash-in and -outs, bulk disbursements, bill payments, merchant payments, and airtime top-ups.

Customers use P2P transfers the most, including both domestic and international ones. An average customer is sending or receiving $57 per month. We could already see that Safaricom launched M-PESA originally for this purpose allowing the breadwinners to send money home cheaper and faster.

Cash-in and cash-out services can sound obvious, but they are really important as they are the enablers for remittances and for all the other services. People have to put money on their phones to send it to their family who then has to withdraw it. Also, by cash in, people can store money on their phones and use it at merchant payments, and by cash out people can withdraw the government benefits. An average mobile money customer deposits $56 and withdraws $46 per month.
Bulk Disbursements - including person-to-government (P2G), government-to-person (G2P) payments and other bulk payments as well – are accounting for $11 of the average customer’s monthly money movements, and bill payments (accounting for $10) are increasing as well, because of the time and money people can save. More and more stores allow mobile money payments, and also a few numbers of people use mobile money for airtime top-ups to save time. Averagely people spend $4 using mobile money for merchant payments, and $3 for airtime top-ups. (GSMA, 2018a)

Mobile money used to mean offering these services on all kind of phones, not just on smartphones – because of the criteria of inclusiveness - with the help of USSD technology, however since 2016, smartphone only solutions got included in the deployment tracker as well, resulting from the rapid growth of smartphone and internet penetration, meaning that now they are more easily accessible for the poorer people as well. (Jain, 2016)

We also have to mention over-the-counter (OTC) transactions, when the sender or the receiver does not have a mobile money account, therefore the agent is trusted to execute the transaction. There can be 2 different scenarios; one is when neither the sender nor the receiver has an account; and the other one is when only one of them has one. If neither of them has an account then the transaction looks like the following: the sender goes to the agent and gives cash to him, who afterwards sends the money to another agent, where the receiver can cash out after providing the pin code of the transaction. In these scenarios the sender and/or the recipient does not have a mobile money account, still, we can consider them as mobile money transactions, executed by the agents. (Chen, 2013)

What is really important that a whole ecosystem is needed with different stakeholders to offer mobile money services. Initially, mobile network operators (MNOs) started to offer mobile money services, like in case of M-PESA, however since then, as technology evolved and regulations became stricter, other players have arrived to the market. We can see the shares of the different archetypes in the following figure, differentiating them based on whether a value chain element is owned by a bank, an MNO or a third party. (Chironga – Grandis – Zouaoui, 2017)
The value chain elements are really important in the ecosystem. Despite the fact that we defined mobile money as a service to the unbanked, an account at a formal financial institution is needed to hold the deposits of the customers and to serve as a liquidity account to the agents, hence we can see that mobile money basically exists in the intersection of the telecommunication and financial sector, therefore collaboration is much needed. Also, because the provision of financial services happens outside of bank branches, an infrastructure is needed for cash in, cash out and for registration. This infrastructure is the network of agents (or “merchants”) who earn a small commission after the different transactions. (Donovan, 2012) Agents can be anybody starting from small-scale traders and chain stores to MFIs and even bank branches. (GSMA, 2012) The actors are separated also by who issues the e-money; through which payment platform the transaction happens and obviously there is a telco channel as well.

The most popular solution is still the MNO-dominant, where the MNO does all the value chain elements by itself, a bank is only needed to hold the deposits. Partnerships are on the rise as well, especially the MNO-led partnership, where a bank also assists in issuing e-money. Bank-led and bank-dominant partnerships are not as widespread, in this archetypes MNOs only assist in the “telco channel”, they are needed to deploy the service to the mobile devices. Fintech Solutions are expanding as well, mainly in places where the regulatory environment wasn’t favorable for MNOs. (Chironga – Grandis – Zouaoui, 2017)
Last but not least to complete the picture of the mobile money ecosystem we have to mention that besides the mainly MNOs who offer the service, the customers who use it, the banks who provide the liquidity, the agents who are the intermediaries, the fintech solutions who are the challengers; really important actors are the governments and other regulators, who create the regulatory environment that mobile money deployments must operate in. (Donovan, 2012)

We can see that the above-mentioned archetypes overlap quite strongly with the already mentioned categories of digital financial services providers. In the mobile money deployment tracker products of banks are included as well because they offer not only traditional banking accounts and services but simplified transactional accounts as well. In my thesis, I will concentrate more on the mobile money provided by MNOs because they are easier to identify, and so far, they have the biggest market share and the biggest impact. However, it is really important to note that the other players are on the rise as well, especially Fintech solutions, so this dominance can change quickly.

2.3. Impacts of mobile money

In this subchapter first, I am going to show the mobile money usage around the world to illustrate its importance and relation to financial inclusion and account penetration. As mobile money is not needed in the high-income countries, because of the already well-established banking infrastructure, this analysis will only cover the developing part of the world. Afterwards, I am going to do a literature review on the already published studies about the impacts of mobile money, in order to fully understand why the introduction of mobile money to Laos could be beneficial.

I have created a chart to illustrate the total transaction volume in every region (figure 4), and also, I have collected the account (15+) and the financial account penetration(15+), the mobile money usage (15+), their 3 years growth, and the account’s 6 years growth (for the financial account and mobile money usage there was not enough data available for compounding 6 years growths) based on the World Bank’s Financial Inclusion Indicators. (World Bank, 2018b) (see Appendix 1 for the countries that have a higher mobile money usage than 20%) I have also calculated the percentages of people who only use mobile money without having a financial institution account, and who only have a financial institution account without using mobile money services. (see Appendix 2 for these figures in the countries that have a higher mobile money penetration than 30%)
Mobile money is the most successful in Sub-Saharan Africa; 64% of the total mobile money transactions happen here. In 11 African countries mobile money usage is higher than 30%, nowhere else in the world reaches this percentage. Kenya has the biggest mobile money usage, where 73% of the population have used it in the last 12 months, 56% of the population has had an account at a formal financial institution, and 82% of the population have used any type of account. It is followed by Uganda with 51% of mobile money, 33% of formal and 59% of total account ownership, and what is notable that only 8% of the population owned an account at a formal financial institution without using mobile money, and 26% of the population used mobile money without having an account at a financial institution. The shares of mobile money, financial account and total account ownership in Zimbabwe (49% for mobile money) and Gabon (44% for mobile money) show a similar tendency to Uganda, they are the 3rd and 4th ranked countries regarding mobile money usage.

If we look at the 3-years and 6-years growths, we can see that East Africa has slowed down a little bit, however in West and Central Africa, where mobile money arrived a bit later the growth is really significant. In Gabon, mobile money usage grew by 555%, in Burkina Faso by 972%, in Senegal by 414% and in Togo by 1422% since 2014. The overall account growth is the biggest here as well both if we look at the 3 years and the 6 years values.

28% of the total transactions happen in South-Asia, however, it is not that visible on the percentage of the mobile money usage, because of the huge population of the region - India is the 2nd, Pakistan is the 6st and Bangladesh is the 8th most populated countries in the world, accounting for more than 1,5 billion people of the world’s population (CIA,
2018) – however, it still means a huge amount in transactions. Bangladesh has the highest mobile money penetration in the region with more than 20% mobile money users and an account usage of 50%.

Latin America and the Caribbean accounts for 4% of the total transactions, and one country, Paraguay is amongst the countries with a mobile money usage of over 20%. Middle-East and North Africa and East-Asia both accounts for 4% of the total mobile money transactions. Here we can see that Iran, the United Arab Emirates and Mongolia are the countries with more than 20% of mobile money usage. These countries, however, are a bit different than the already mentioned ones, because the total account ownership is higher than 90% in all 3 countries, but still, their mobile money usage is growing rapidly, for instance in Mongolia it grew by 338% and in Iran by 485% in the last 3 years.

Proceeding to the second part of this subchapter, we have to first state that the most important impact of mobile money is the already mentioned pathway role for financial inclusion. While it is not itself a solution to financial exclusion, it is an access point to formalized financial services, because many people have a mobile phone and one or more subscriptions, even though they have no financial accounts. What is really important to highlight that mobile money is not necessarily a competitor to traditional banks or other innovative solutions. I will illustrate this statement with the example of Kenya and M-PESA.

Kenya was an early adopter of mobile money resulting that now 73% of the population have used mobile money in the last 12 months. Building on this dominance, CBA, a local bank partnered up with M-PESA and created M-Shwari to provide deposit and lending products on mobile devices. M-Shwari grew fast and has disbursed 277,2 million loans until 2014. Similarly, the market share of CBA of deposits increased to 6% in 2015 and its share of the total number of bank accounts grew to 37%, while in 2012 it was only 7% and accounted for 63% of the total new bank account openings between 2012-2015. (Saal – Starnes – Rehermann, 2017) Examples for collaborations can be seen in case of MTN as well, that partnered up with Commercial Bank of Africa and disbursed 140,000 loans in half a year. (MTN, 2017)

Not just banks but innovators build on the payment system of M-PESA, such as innovative pay-as-you-go models for durable goods, like solar panels. Their innovative business model now has expanded to other regions in the world, enabling the microleasing of devices that can be remotely controlled and paid for, resulting that the solar hardware
companies became basically de facto leasing companies, because in case of the device is paid off, it can be used as a collateral for further lending purposes. (Saal – Starnes – Rehermann, 2017)

Beyond the impacts on the formal financial institution sector, M-PESA had impacts on the Kenyan economy and society as well. For the 10 years anniversary of M-PESA KPMG made a report about the previous 10 years of Safaricom and M-PESA. They have estimated that Safaricom’s average annual contribution to the Kenyan GDP was 6,5%, and they have created 845,000 jobs over the years. They also estimated that after every 1 Shs they added 0,06 Shs to the Kenyan economy and 6% of income generated from infrastructure investment and revenue that flowed to low-income households over the past decade. In addition, M-PESA had a Shs 185bn social impact, mainly creating value from customers being able to send, receive and save money freely. M-PESA is committed towards the Sustainable Developments Goals, by actively integrating 9 of them into its strategy by creating innovative services like M-Tiba, a health saving product, in order to allow people to access to healthcare, or the support of FarmDrive, that offers an alternative credit scoring model for smallholder farmers. (Safaricom, 2017)

Although it is really difficult to measure the overall impact of mobile money worldwide, there have been several studies that measured the impacts regionally. For instance, in Kenya when people had to face with an unexpected fall in their incomes, the ones with mobile money accounts did not reduce their spending, while the ones without an account had to cut their spending on food and other things by 7-10%. (Dean at al., 2016) Furthermore, besides its already mentioned benefits of domestic remittance from the urban areas to the rural ones, it can also ease bill payments and government benefits. A study showed in Nigeria that switching the payment of government social benefits to mobile phones instead of cash, resulted in an average of 20 hours drop in travel and waiting time for the recipients. (Demirguc – Kunt et al., 2018)

The broadest and most precise regional study about Kenya was published by Suri - Jack, 2016, who made several other studies about the impacts of M-PESA before. They analyzed a sample collected from 2008-2014. They had previously shown that mobile money helped individuals to protect themselves against health and income risks by accessing to a wider network of social support and also in case of a shock or disaster, they could have received remittances more easily. Now their findings were mainly related to the long run poverty reduction and gender equality. To sum up they estimated that M-
PESA lifted 194,000 people - 2% of the total population - out of poverty and increased the per capita consumption levels in the country.

The impacts were a lot more significant for female-headed households; the study showed not only changes in household behaviors (mainly increased financial resilience and saving) but also it had labor market outcomes, like occupational choices; women previously working in agriculture moved into the business sector. Hence mobile money allowed a more efficient allocation of labor and increased the efficiency of household consumption resulting eventually in poverty reduction in Kenya. Their important finding was also that the route out of poverty for women is not necessarily capital, as other studies about microfinance showed before, but financial inclusion in a more basic level, that allows them to manage the already available financial resources. (safely store, send and transact money). (Suri – William 2016)

Also examining the World Bank Financial Inclusion Indicators can lead to similar conclusions. For instance, if we take a look at the gender gaps regarding account ownership, we can see that it is a lot higher than in case of mobile money and mobile money only users. In addition, if we examine the account and mobile money ownerships at the 40% poorest population we can get to the same conclusions. Furthermore, mobile money helped the remittance allocation in case of conflict zones and disastrous areas. These findings, however, are limited and don’t take other factors into account, so would have to be handled with limitations and would need further investigations and researches. (Demirguc-Kunt et al., 2018)
3. Country Analysis of Laos

3.1. Introduction of Laos

Laos, officially the Lao People’s Democratic Republic, is a small landlocked country in Southeast Asia, neighbored by Thailand, Cambodia, Vietnam, and China. It was a French colony until 1953 when the country entered the Vietnamese War. After the war communist forces took over the power and pushed the country into isolation until the 1990s when the Soviet Union fell apart. Currently the country is still amongst the few remaining Communist countries in the world, however, it has started to open up and has one of the highest GDP growth rates in the region, that is actually the 9th highest in the world, however, it still remained underdeveloped, poor and dependent on foreign aids. (BBC, 2018)

In this chapter I will analyze Laos with the help of PESTEL analysis, then I will shortly introduce the region, Southeast Asia, and place Laos in it, and - because there is no mobile money deployment presented yet in the country - going to show the current mobile banking situation and mobile money initiatives in Laos and the current mobile money situation in Southeast Asia.

<table>
<thead>
<tr>
<th>Capital</th>
<th>Vientiane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>7.13 million (101th)</td>
</tr>
<tr>
<td>Area</td>
<td>236,800 km² (85th)</td>
</tr>
<tr>
<td>Government type</td>
<td>Communist state</td>
</tr>
<tr>
<td>Currency</td>
<td>Kip</td>
</tr>
<tr>
<td>Ethnic groups</td>
<td>Lao 53.2%, Khmou 11%, Hmong 9.2%, total: 200+</td>
</tr>
<tr>
<td>Language</td>
<td>Lao (official), French, English, ethnic groups’ languages</td>
</tr>
<tr>
<td>Religion</td>
<td>Buddhist (64.7%), Laotian folk religions</td>
</tr>
<tr>
<td>Income Level</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>GDP (PPP)</td>
<td>$49.21 bn</td>
</tr>
<tr>
<td>GPD/capita (PPP)</td>
<td>$7 400</td>
</tr>
<tr>
<td>GDP growth</td>
<td>6.8%</td>
</tr>
<tr>
<td>Population below poverty line</td>
<td>22%</td>
</tr>
<tr>
<td>Labor force</td>
<td>Agriculture: 73.1%, Services: 20.6%, Industry: 6.1%</td>
</tr>
</tbody>
</table>

Table 1: Country Profile of Laos

Source: Own Compilation, based on IMF, 2018, CIA, 2018, World Bank, 2018c
### 3.2. PESTEL analysis

The PESTEL analysis is a tool that is used to examine the macro (external) factors of a country. (Oxford College of Marketing, 2016) All of the 6 factors (Political, Economic, Social, Technological, Environmental, Legal) are strongly related to the success factors of the adoption of mobile money.

The political part is important because it includes the country risks and the obstacles of doing business, and it determines the regulatory environment. The economic part examines all the factors that are related to the development level, which is also identified as one of the important success factors. The social part shows the diversity of the population and includes the age distribution of the society, that can influence the acceptance of new technologies. The technological part is inevitable in the analysis because technology is the base of the expansion of mobile money: without mobile phones, it can’t exist either. The environmental part is important to examine the rural-urban ratio and to analyze the possible natural disasters, where mobile money can help with immediate aid remittances. Finally, the legal part shows all the regulatory frameworks that determine whether mobile network operators can offer financial services or not.

<table>
<thead>
<tr>
<th>P</th>
<th>- One of the few remaining communist countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- High Country risk level with really high corruption</td>
</tr>
<tr>
<td></td>
<td>- Barriers to doing business are tax rates and regulations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>- Rapid development and high GDP growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- But still many people live below the poverty line</td>
</tr>
<tr>
<td></td>
<td>- Really low unemployment level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S</th>
<th>- Really diverse country in case of ethnics, religion, and languages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- The Population is really young, half of the people are below 25</td>
</tr>
<tr>
<td></td>
<td>- Education level is increasing, but uneducated workforce and illiteracy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T</th>
<th>- Mobile penetration is low compared to the region</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- “Mobile first country”</td>
</tr>
<tr>
<td></td>
<td>- People mainly access the internet through their mobile devices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>- Small country, however, it has a poor infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- The share of rural population is still really high</td>
</tr>
<tr>
<td></td>
<td>- The Northern part is more densely populated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L</th>
<th>- Government is making new regulations with the help of UNCDF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Mobile Money for the Poor (MM4P) initiative</td>
</tr>
<tr>
<td></td>
<td>- Clarification of the role of different stakeholders is in progress</td>
</tr>
</tbody>
</table>

*Table 2: Summary of the PESTEL analysis of Laos*

*Source: Own Illustration*
Laos is one of the few remaining communist countries in the world, however it has been opening up in the last years. For the Political factor I have examined the country risk based on the World Bank’s Governance Indicators (see Appendix 3), that uses a 0-100 scale to indicate the rank of the country among all countries in the world. 0 means the lowest rank, while 100 is the highest one, and above 60 the country qualified as a no risk country. (World Bank, 2018d) We can see that Laos is however a politically stable country with no high level of violence or terrorism, it has a really low level of Voice and Accountability (4 out of 100) – which includes the lack of freedom of speech - and also its rule of law and regulatory quality is really low. Moreover, the corruption level is really high, it is the 138th most corrupt country in the world (Transparency International, 2018), which can be a worrying thing regarding mobile money, as corruption is maintained by cash. Furthermore, the surveyed people by the World Economic Forum found tax rates and regulations as two of the biggest problem of doing business in the country (see Appendix 4) (World Economic Forum, 2018)

Regarding the economic factors; Laos is a lower-middle-income country with a really small population of around 7 million people. It has a quite low GDP ($48bn, PPP), and a GDP/capita of 7 023$. (World Bank, 2018c) It has a GDP growth level of 6,8%, which is the 8th highest in the world. (IMF, 2018) Still 22% of the population live below the national poverty line, and agriculture, dominated by rice cultivation in lowland areas, still accounts for about 20% of the GDP, and 73% of the total employment. Moreover, the country has a really low unemployment rate (1,5%) which means the 12th lowest value in the world. (CIA, 2018)

Examining the social factors, we can see that one of the biggest challenges in this small country with 7 million people is diversity. The Laotian Government recognizes 48 different ethnic groups; however, the real number of them can be somewhere around 200 and Lao people only account for 53,2% of the population. (CIA, 2018) Lao is the official language, but the presence of further 80 local languages is estimated. (UNCDF, 2017b) The most wide-spread religion is Buddhism (60% of the population) and 30% of the country follows no religion or Laotian animist folk religion. (CIA, 2018) Only 79,9% of the adult population can read and write, however, we have to note that the country has a really young population, with 50% of the people being below 25 years old. (CIA, 2018) Although the level of education is improving, still the biggest perceived problem for doing business in Laos is the inadequately educated workforce of the country. (World Economic Forum, 2018)
If we take a look at the technological factors, we can see that there are 3,71 million mobile subscribers in the country and 4 mobile network operators, the most significant is Unitel, that has a market share of 50% (Vietnam News, 2017) It is the only country in the region that has no mobile money deployments yet, only some mobile banking initiatives has been introduced. In 2015 the mobile penetration was 35% (Statista, 2018), however, only 13% of the population has accessed to the internet by PC, mostly from internet cafés in urban areas, hence we can consider Laos as a “mobile first” country. (Adkins, 2015)

There are no particular environmental factors, as Laos is a relatively small landlocked country, without significant natural disasters, so bank branches and mobile money agents could reach most of the locations. Although it is important to note that the country still has a really poor infrastructure level, (CIA, 2018) and that 66% of the population lives in rural areas (World Bank, 2018c) many of them locked away from the more developed northern parts. (CIA, 2018)

Finally, we have to proceed to the regulatory factors, which is one of the most important ones regarding mobile money. UNCDF with Bank of Lao PDR and the Central Bank is currently implementing the Making Access to Finance More Inclusive for Poor People (MAFIPP) and the Mobile Money for the Poor (MM4P) aiming to reach millions of new customers without accounts. UNCDF established the Making Access Possible (MAP) Financial Inclusion policy framework to diagnose financial inclusion by examining factors like gender, geographic location, income level and other demographics. (UNCDF, 2018a) In 2018 a National Payment System (NPS) was ratified in Laos, which aim is to clarify the different stakeholders’ (banks, MNOs, MFIs, government stakeholders) role in the financial ecosystem. A payment department within the BoL will be established as well, with the role of issuing licensing to payment system operators and payment service providers. It could also become the accelerator of the creation of accessible affordable and more innovative payment solutions in Laos. (UNCDF, 2018a)

It is important to compare these results of Laos to the other countries in the region. Southeast Asia is a collection of a really diverse group of countries as we have already seen in the case of Laos. As an example: despite the fact that the region is more known about Buddhism, the world’s biggest Muslim country, Indonesia lies here, that is also the 4th most populated country in the world. Totally more than 600 million people live in this region including several ethnic groups (in some countries more than 200 different ones)
with many different ethnic languages just to make it more complex. Also, one of the world’s most developed economy, Singapore belongs here parallely to some of the least developed countries in Asia, such as Cambodia or Myanmar. (CIA, 2018)

Although there are some differences in how we categorize Southeast Asia, the most common is that it consists of 11 countries and can be divided into 2 main parts. The mainland means Thailand, Vietnam, Cambodia, Laos, Myanmar; and the maritime countries are the Philippines, Indonesia, East Timor, Brunei, Malaysia, and Singapore. (Watson Andaya, 2018) Except for East Timor, all the other 10 countries are the member of the Association of Southeast Asian Nations (ASEAN), which aim is to accelerate cultural, social and economic collaboration and the promotion of peace and stability in the area. (ASEAN, 2018)

The region includes 2 really small countries, Brunei and East-Timor and 3 lot more developed countries than the others, Singapore, – high-income country, it has one of the highest GDP/capita in the world – Thailand and Malaysia – upper-middle income countries, they are not as developed as Singapore, however still regarding development and account ownership - more than 80% of the population has an account (World Bank, 2018b) - they are really different from other countries in the region, so I will compare Laos with the remaining 5 countries (Cambodia, Indonesia, Myanmar, Philippines, Vietnam) and will show some mobile money examples from there.

If we want to place Laos in SEA, we can see many similarities with the other 5 countries, like diversity, high level of corruption, low unemployment rate, high GDP growth, poor level of infrastructure. Although It is the smallest country after Singapore, it has the smallest GDP, however an even higher GDP/capita than Vietnam, it has a lower technology level, a poorer regulatory framework and one of the highest percentage of people living below the poverty line (CIA, 2018) (see appendix 5 for more information)

3.3. Mobile Money in Laos and around Southeast Asia

Star Telecom (Unitel) is the first operator who wants to launch a mobile money service in the country, however, it is still in a research and testing phase. Their findings so far are that a lot more people know about the mobile money technology than what they have expected and that there will be challenges with the lack of English-speaking population deriving from the above-mentioned diversity. (UNCDF, 2017b)

Despite the fact that there is no mobile money deployment yet, in June 2015, Banque pour le Commerce Extérieur Lao Public (BCEL), one of the biggest banks in Laos with the
help of the United Nations Capital Development Fund (UNCDF) launched branchless banking through agents as part of the Making Access to Finance More Inclusive for Poor People (MAFIPP) initiative. Today it is represented in every province of the country with around 200,000 users (The Laotian Times, 2018a). Other mobile banking solutions - such as BFL E-Banking (BFL, 2018), LDB (Lao Development Bank) mobile banking app, Lao Viet Bank Smart Banking App, JDB Yes, Kapao E-Wallet, ACLEDA Unity Thanchai1 - are not as widespread yet, however expanding rapidly, and the government recognizes the QR payment of 3 of them (BCEL’s One Pay, Lao-Viet Bank’s QR Pay and New Concept Microfinance Institution’s Kapao E-wallet. (The Laotian Times, 2018a)

In the following table, we can see some information about financial inclusion and mobile and internet penetration in Southeast Asia. We can see that none of the below-listed countries has a higher account ownership than 50%. Moreover, we can see that mobile money usage is not that widespread, it is the highest in Cambodia, however if we take into consideration the population of these countries, in Vietnam, Philippines and Indonesia it still means more than 15 million users in total.

<table>
<thead>
<tr>
<th></th>
<th>Account (% age 15+)</th>
<th>Financial institution account (% age 15+)</th>
<th>Mobile money account (% age 15+)</th>
<th>Mobile subscriptions (million people)</th>
<th>Mobile money users (million people)</th>
<th>Internet Penetration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>22%</td>
<td>18%</td>
<td>6%</td>
<td>18,57</td>
<td>0,91</td>
<td>49%</td>
</tr>
<tr>
<td>Myanmar</td>
<td>26%</td>
<td>26%</td>
<td>1%</td>
<td>47,95</td>
<td>0,37</td>
<td>33%</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>29%</td>
<td>29%</td>
<td>-</td>
<td>3,71</td>
<td>-</td>
<td>35%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>31%</td>
<td>30%</td>
<td>3%</td>
<td>120,02</td>
<td>3,34</td>
<td>66%</td>
</tr>
<tr>
<td>Philippines</td>
<td>34%</td>
<td>32%</td>
<td>5%</td>
<td>115,82</td>
<td>4,74</td>
<td>63%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>49%</td>
<td>48%</td>
<td>3%</td>
<td>458,92</td>
<td>8,25</td>
<td>53,7%</td>
</tr>
</tbody>
</table>

Table 3: Financial Inclusion, mobile and internet penetration in SEA

Source: Own Compilation, based on World Bank, 2018c

One important trend is not true for Laos, that people have more mobile subscriptions than the population. In the other countries the reason for this is the increased tariffs amongst the different mobile network operators, resulting in people using multiple sim card phones. In Indonesia, however, we can see an improving trend, as MNOs collaborated and made their mobile money services interoperable. It is unfortunately still be realized on a higher tariff, so it is working more on a theoretical level. (Camner, 2013)

---

1 Because many of the Smart banking application do not have a website, I have collected them from Google Play (Google Play, 2018)
According to the Mobile Money Deployment Tracker, in Cambodia there are 8, in Indonesia there are 7, in Myanmar there are 4, in the Philippines and Vietnam there are 3-3 mobile money deployments. (GSMA, 2018c) The first mobile money provider in the world, Smart Money was established in the Philippines by Smart Communication because of the huge number of Filipino workers working abroad. Since then 2 main players are there at the market, both are MNOs. (Hasnain, 2016) In Indonesia the biggest mobile money providers are the MNOs as well, the biggest player is TCash, and as it has already been mentioned, working interoperable with other MNOs. (Camner, 2013)

In Cambodia and Vietnam, the situation is different. In Cambodia, the biggest player, WING is a specialized bank. After knowing this, if we examine the statistics of the World Bank again, we can see that in 2011 less than 4% of the population had an account, this number increased to 22% in 2014 and 2017. In 2014 13% of the population used mobile money services, however in 2017 it dropped to 6%, even though mobile money services are more and more successful in Cambodia. (World Bank, 2018a) The reason behind this change can be that Wing acquired specialized bank status in 2014, (The Phnom Penh Post, 2014) however, as we have seen at the definition part of mobile money, these services can still be counted as mobile money, because they provide basic transaction accounts to the unbanked. Vietnam’s biggest player is MoMo, which is a fintech company. There are more than 20 players who offer mobile money and mobile payment solutions in the country, the market is really fragmented. (Fintechnews Singapore, 2018) Myanmar is a transition between these solutions, because it has traditional MNO-based mobile money providers, like the biggest player, Wave money by Telenor, however it has the biggest smartphone penetration, therefore mobile banking apps and Fintech companies have been created recently as well. (Biallas – Minischetti - Vizcarra, 2017)
4. Success Factors of Mobile Money

4.1. Literature Review

Before proceeding to the actual analysis and answering the research question, I am going to do a literature review on the already published analysis’ and researches about the topic. A Literature review is important because it helps to identify all the possible factors that are significant and can be analyzed later. Afterwards, I am going to summarize all the identified factors and going to organize them by identifying some common characteristics. Finally based on the identified factors I am going to illustrate my research question and research methodology.

In early studies, researchers identified Safaricom’s dominance as the main success factor. According to Jack-Suri, 2011 besides the fact that technology (high mobile phone penetration and technological standards, like USSD) is essential, the extensive customer base and the already acquired trust was the key. Complementing this, Mas-Morawczynski, 2009 also stated that the already established agent network and the strategy to consciously expand it more by putting more agents in every region are also one of the most important factors.

Donovan, 2012 highlighted these as well, but also added that these factors are all important because of the scale of economies; mobile money services are successful because the operators recognized that even though they earn very little money on each transaction, they can still remain profitable if they reach the mass population and gain a big market share. He also stated that the large number of unbanked people and the gap between their needs (people working in cities want to send money back to rural areas) and the actual alternatives offered by banks are essential.

Researches on macroeconomic factors, like GDP/capita, unemployment level, urban population growth are well presented, such as in Peruta, 2015’s work, who did a cluster analysis with these factors. Social factors can play a role as well, a research in Ghana analyzed the relation amongst some social factors, such as between education level and age-distribution and mobile money saving accounts. (Osei-Assibey, 2015)

According to Donovan, 2012 mobile money is cheaper, faster and safer than the alternatives, including cash. Already in the early years of mobile money, a research in 10 countries by McKay - Pickens, 2010 ended with results that branchless banking is 19 times cheaper than the traditional banking services. In Kenya, M-Pesa was half or one-
third of the price than the similar services, moreover we also have to note that in Botswana, where the minimum cost per transaction was more than a dollar, mobile money could not become that widespread. Mobile money can be safer, because cash can trigger mugging, and also it can provide safety for women allowing them to have their own savings on their phones. Speed comes with liquidity as poor people many times keep their values in illiquid assets, such as livestock or gold, which could be realized slowly in some cases. (Donovan, 2012)

According to a study on Nigeria, restraining factors of the acceptance of mobile money are lack of information, safety concerns, reliability concerns, and lack of interest. Also, they examined the acceptance of mobile money with the help of the Technology Acceptance Model (TAM) and got to the conclusion - like many others - that self-efficacy, behavioral intentions don’t, however, perceived ease of use, perceived financial cost, and the amount of information does influence the acceptance of mobile money in Nigeria. (Ezeh – Nwankwo, 2016)

Also, in an extensive survey with 3000 respondents researched the use of M-Pesa and also compared it with other solutions based on the speed, the convenience, the cost and the safety of use. They also identified the already mentioned success factors, like poor existing alternatives, supporting regulatory framework, dominant operator, reasonable base of banking infrastructure and latent demand, however, they went further and examined the quality of the service itself that M-PESA offered. They highlighted the ease of use and the simplicity (such as the user interface), the removal of adaption barriers (it is free and easy to register), the accessibility for everyone (it is possible to send money anywhere), the trust, and the liquidity of the banks as the most successful factors. (Mas – Radcliffe, 2010)

Researchers in other countries as well highlighted trust as one of the significant factors, such as in a study about the acceptance of mobile money in Uganda. Their conclusion was that the trust in mobile money itself, and in the operator that provides it, reduced the perceived risk. (Baganzi-Lau, 2017) In addition to all these factors in a study about the introduction of mobile money to Rwanda, the collaboration amongst the different stakeholders, interoperability and access to electricity were identified as dominant factors as well. (Uwamariya - Michalik – Loebbecke, 2016)
Finally, the most important is that in every study we can meet with the importance of the enabling regulatory framework, especially in the study of Burns, 2016, where he examined different factors, that other researchers found important - such as urban density ratio - however he got to the conclusion that the market-led approach with financial freedom, instead of the state-led one, and a not too strict regulatory environment that enables mobile money providers to operate without strict KYC (Know Your Customer) and AML (anti-money-laundering) regulations could eventually lead to the most extensive spread of mobile money.

4.2. Summarizing the road for success

Building on the literature review and also on the theoretical background part – mainly on the summary of the impacts of mobile money – I will organize all the already mentioned factors into a structure in this subchapter. It is important to note that, however, I was trying to collect researches about different countries and also researches on a global level most of the papers are about the success and the impacts of M-PESA, deriving from the fact that it was one of the first providers, and that currently Kenya has the most significant share of mobile money users as well. We have to keep in mind the limitations of this summary because in many cases some factors can be true for Kenya but not necessarily for every other country, but still, it can serve as a good base to understand some important patterns.

First and most important is that there was a large unbanked population in the country, who had a latent demand for financial services. (Donovan, 2012) In Kenya that meant mainly the need for money transfer from urban areas by the breadwinner to rural areas to the family, which was previously done by carrying cash by public transport. (Michael, 2017) There was a gap between what people needed and the alternative offers by banks. The need for financial services was there because people were not excluded from the financial sector according to their will; the exclusion was non-voluntary because there was no adequate solution for their needs by the formal financial sector. (Gortsos, 2016) The formal financial sector couldn’t satisfy the need because the poor people didn’t have enough income to afford financial services and moreover establishing bank branches in remote areas comes with a huge fixed cost. (Costa-Ehrbeck, 2015)

Obviously - to go even further - behind this gap there are many macroeconomic and social factors in the background. A large unbanked population is there because we talk about developing countries where there are still many poor people living, hence we have to
mention some development indicators, mainly based on Demirguc-Kunt et al, 2018. GDP/capita, unemployment rate and GDP growth can be the influencing macroeconomic; age distribution, education level and women’s access to financial services the social; and urban population growth, access to electricity and population density (Uwamariya - Michalik – Loebbecke, 2016) can be the geographical factors. We have to note here that it is not an extensive list because these macroeconomic factors do not necessarily have a direct influence on the mobile money penetration, more like an indirect one by influencing the environment of a certain country.

So far, we talked about quite general factors; most of the time in business it is usually the same, that there is a (latent) need that our company wants to satisfy and that the broader macroeconomic and social factors of a certain market influence our business. What is more specific for mobile money is the presence of the infrastructure. In most of the researches these factors were demonstrated as the biggest enabler of the success of mobile money. (Mas- Morawczynski, 2009, Jack-Suri, 2011, Donovan, 2012) Despite the fact that the lack of sufficient formal financial service providers is one of the biggest enablers, still a reasonable base of banking infrastructure is needed - as already explained in the theoretical analysis part – in order to keep the agents liquid. (Chironga – Grandis – Zouaoui, 2017) Technology is needed a lot as well, as without mobile devices and USSD technology mobile money could have not evolved. (Donovan, 2012)

These factors that we have listed until now were the ones that characterize a country, hence we can call them country-specific ones. Although only these country-specific factors are not enough to analyze the global success of the expansion of mobile money, there are factors, that are more specific to the mobile money providers, and to how the population perceive the services of mobile money, therefore it is inevitable to include all these as well in our analysis, in order to get a more holistic picture.

Continuing the list of the infrastructural factors with the more mobile money provider-specific factors, we can see that the dominance and the monopol situation of an MNO is necessary, as it has a huge number of customers already who trust it, and also an already established agent network. Finding partners at launch and expanding their number later is inevitable as well because of the increasing competition, which can be a challenge but also a further opportunity as well which can be leveraged through partnerships. (Uwamariya - Michalik – Loebbecke, 2016)
Also, really important that these factors are not enough by themselves; a clever strategy was necessary for the success. M-PESA’s main strategy was to leverage on its economies of scale by building on the number and the trust of its customers. They also soon realized that even though transaction costs are low, they can achieve a really huge profit if they win the mass market for themselves and it could only be done with the help of the extensive agent network. Also, it wasn’t enough that users had already trusted in Safaricom, they had to create a further really favorable perception to be totally accepted by the users. These factors can be linked to the technology acceptance model, but also can be broadened a little bit. Mobile money services have to carry a superior client experiences; they have to be perceived fast, easy to use, widely accessible for everyone, safe, cheap and have to carry an additional value for the users, in other word users have to perceive them as a more useful solution than the alternatives. (Mas – Radcliffe, 2010)

Last but not least- it could have been included within the infrastructural factors as well - however it is really important to emphasize its importance- regulatory environment is one of the most important success factors. Almost all of the researches highlighted that without an enabling regulatory environment and financial freedom, it is impossible for mobile money to spread in a country, and that a market-lead approach is the key for the success instead of the state-led one. (Burns, 2016)

The following figure summarizes all the factors that were important for the successful expansion of mobile money worldwide. All these factors will be detailed and - where possible - measured and analyzed globally and in Laos later in the next chapter.
Development indicators

The current situation

Infrastructure

Country-specific factors

MNO-specific factors

Strategy

Figure 5: Summary of the success factors of mobile money

Source: Own figure
4.3. Research Methodology

“What factors are necessary for the successful introduction of mobile money to Laos?”

The research question of this paper can be seen above. So far, we have identified all the success factors based on the researches and studies globally, however we have to select the most significant ones and have to analyze them in Laos.

We can see that the already illustrated success factors have some differences. On one hand, the macroeconomic factors and the factors connected to the basic need, and some of the infrastructural factors, like technology, banking infrastructure and the regulatory environment are external factors, and characterize a certain country. They are measurable easily and can be analyzed statistically as there is publicly available data by different institutions, the most extensively by the World Bank.

On the other hand, the dominance of the MNO, either by the customer base, the agent network and the partnership structure are derived by the certain mobile money deployments and are not necessarily characterized by the factors of the country. Also, the perception of mobile money is based on the characteristics of the population, however, it can be influenced by the mobile money deployment’s marketing strategy, therefore it can’t be measured easily by external factors, more by questionnaires.

To get the full picture of the successful introduction of mobile money, I will analyze the external factors with the help of linear regression to identify the most significant ones that have an effect on mobile money penetration, out of the 15 previously listed factors. Afterwards I will examine these factors in Laos, whether they are presented or not and whether they could contribute to the successful introduction of mobile money.

To examine the internal factors as well, I will shortly analyze the remaining infrastructural factors and based on them I will compare 5 of the most significant mobile money providers in 5 countries and will analyze the results in Laos. Finally, I will examine the perception of mobile money in Laos with the help of a questionnaire. Obviously because there is no mobile money provider yet in Laos – however Unitel is planning to launch a mobile money service – the questionnaire is more to measure the respondents’ first impression of mobile money, and what are the latent needs and pitfalls of the current mobile banking system that mobile money could satisfy.
5. Introduction of Mobile Money to Laos

5.1. Statistical Analysis of the country-specific success factors

As there is a big amount of data available online regarding financial inclusion and general development indicators (776 indicators only for financial inclusion and 115 for different other development indicators) it is easy to do a statistical analysis. I have decided to create a linear regression model to analyze the factors that influence the mobile money penetration globally. According to the best of my knowledge there has been no similar analysis, however, some studies and statistical analyses were made examining financial inclusion (such as the work of Kendall – Mylenko – Ponce, 2010 and Ardic – Heimann, Mylenko, 2011) using the World Bank database as well for variables.

5.1.1. Data Collection and Variables used in the analysis

The below table summarizes all the variables I used in my analysis with its method of calculation and its source. I was trying to find the best possible measure for the factors from the previous chapter, so that is why there is a difference between the factors and the variables name. ‘Success Factor’s” name is the actual factor that I find important based on the literature review, and the variable is the best possible way I could capture it based on the databases. It does not necessary means that is the only way, there might be other measures that could describe it as well, or complement it, however in order to simplify it, and to deal with the lack of data, I needed to choose only one. Furthermore, in order not to have many missing values in the analysis, I needed to rely on databases that have information for all the countries.

<table>
<thead>
<tr>
<th>Success Factor’s name</th>
<th>Calculation of the variable / World Bank Indicator’s name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unbanked population</td>
<td>Financial institution account (%, age 15+) in 2011</td>
<td>World Bank, 2018b</td>
</tr>
<tr>
<td>Latent demand for remittances</td>
<td>Sent or received domestic remittances in the past year (%, age 15+)</td>
<td>World Bank, 2018b</td>
</tr>
<tr>
<td>Mobile Penetration</td>
<td>Mobile cellular subscriptions (per 100 people)</td>
<td>World Bank, 2018c</td>
</tr>
<tr>
<td>Base of Banking infrastructure</td>
<td>Commercial bank branches (per 100 000 adults)</td>
<td>World Bank, 2018c</td>
</tr>
<tr>
<td>Regulatory Environment</td>
<td>Mobile Money Regulatory Index</td>
<td>GSMA, 2018d</td>
</tr>
</tbody>
</table>
Secondary independent variables - Broader development indicators

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP/capita</td>
<td>GDP per capita, PPP (current international $)</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>Unemployment, (% of total labor force) (modeled ILO estimate)</td>
</tr>
<tr>
<td>GDP growth</td>
<td>Real GDP growth (annual %)</td>
</tr>
<tr>
<td>Age distribution</td>
<td>Population ages 15-29 (% of total population)</td>
</tr>
<tr>
<td>Women access to financial service</td>
<td>Gap between female and male financial institution account ownership (% age 15+)</td>
</tr>
<tr>
<td>Education Level</td>
<td>Primary completion rate (% of relevant age group)</td>
</tr>
<tr>
<td>Urban population growth</td>
<td>Urban population growth (annual %)</td>
</tr>
<tr>
<td>Population Density</td>
<td>Population density (people per sq. km of land area)</td>
</tr>
<tr>
<td>Access to electricity</td>
<td>Access to electricity (% of total population)</td>
</tr>
</tbody>
</table>

Dependent Variable

| Mobile Money Penetration                      | Mobile money account (%, age 15+)                                           |

Table 4: Variables Used in the Statistical Analysis

Source: Own Compilation

The analysis includes the countries where mobile money is presented according to World Bank, 2018b, meaning that more than 0% of the respondents of the 2017’s survey responded that have used a mobile money account in the past 12 months. With these conditions, 77 countries got involved in the analysis. I have used logarithmic variables instead of the original variables in case of the Mobile Money penetration, the Commercial Bank Penetration, the Remittance Sending and Receiving, the Mobile Penetration, the Regulatory Environment, the Population density and the GDP/Capita. I did so, because in case of highly skewed variables using the logarithms can make them become more approximately normal. (Benoit, 2011) See appendix 6 for the detailed statistics including the mean, median, minimum, maximum and standard deviation of the variables.

I have separated my variables as primary and secondary independent variables and dependent variable. My response variable was the mobile money penetration, I wanted to examine what are the factors that significantly influence the mobile money account

---

2 Variable was calculated based on the World Bank, 2018c indicators:
- Population ages 15-19, female (% of female population);
- Population ages 15-19, male (% of male population);
- Population ages 20-24, female (% of female population);
- Population ages 20-24, male (% of male population);
- Population ages 25-29, female (% of female population);
- Population ages 25-29, male (% of male population)

3 Variable was calculated based on the World Bank, 2018c indicators:
- Financial institution account, female (% age 15+);
- Financial institution account, male (% age 15+)
ownership in a certain country. In most of the previous researches I have read, the researchers highlight some basic factors, such as the unbanked population, the latent demand for a financial service (mainly for the domestic remittance to the rural areas), the technological readiness (mobile penetration), the reasonable base of banking infrastructure (Donovan, 2012) and last but not least the regulatory environment. (Burns, 2016) I have named these factors primary dependent variables, because I know that they have been identified as significant variables and I certainly will try to include them in my model.

I have calculated the unbanked population for 2011, because now mobile money is an option in these countries, so people can choose not to have an account, but to only use mobile money, so it is easier to examine this factor in 2011 when mobile money was not that wide-spread, and there was indeed a latent demand and a large unbanked population.

To measure the latent demand, I have decided to include the indicator, called sent or received domestic remittance in the last year, because it shows the best the importance of the remittance from the urban areas to the rural ones. I decided to include the data for 2017 because of two reasons. One of them is that there was no available data for most of the countries in 2011 and the other is that in 2011, there was no established infrastructure for these remittances, so it is difficult to estimate the actual latent demand.

It is difficult to find data for all the countries about the percentage of the population who has a mobile phone, hence I could have only included the number of mobile subscribers per 100 people, which is many times a bigger number than 100, because most of the people have more subscriptions in order to save on the cost of making transactions to people with a subscription of a different mobile network operator. We have to keep in mind however, that this indicator can’t describe truly the mobile penetration situation; the real share of people who have a mobile device.

The reasonable banking base factor was calculated by the Commercial bank branches per 100 000 adults. Here we can note again that there can be distortions, as this indicator calculates the bank penetration per people not taking the geographical coverage into consideration. It can mean that there are many branches in the urban areas, however mobile money can’t spread because the rural agents can’t be liquid because of the lack of banking infrastructure nearby. Also, we can assume a correlation between this indicator and the urban population growth.
Finally, one of the most important factors, the regulatory environment indicator comes from the Mobile Money Regulatory database by GSMA, 2018d, that aggregates 27 different legal and regulatory indicators, that affects mobile money; and rate it on a scale of 0-100, so it is one of the most complex and precise indicators in the analysis.

Based on the researches, all these factors except the financial institution account (because we assume that the large unbanked population correlates with the mobile money expansion) should have a positive relationship with the mobile money penetration, however it is also possible that commercial bank penetration – as it doesn’t take into consideration geography – serves more as a factor as the “lack of the already available financial services”, as we saw at Figure 6 and results in a negative relationship with the response variable.

As the broader macroeconomic, social, geographic and other development indicators might have an effect on mobile money penetration indirectly, I will examine first whether they have a relation with the response variable and eventually which one can be included in the model, which has a significant effect on the mobile money penetration. These factors have been examined already but in different countries, and not at the same time, that is why I find it important to include them in my model as well in addition to the primary ones. I have chosen 9 development indicators; 3 macroeconomic, 3 social and 3 geographical one. The indicators are mainly from the World Bank’s World Development Indicator and Global Findex Database (World Bank, 2018b), and I always used the one that creates no missing values.

For instance, in the case of the macroeconomic indicators, the unemployment rate is ILO estimated, because there was not enough data for the national unemployment statistics. I have retrieved the data for GDP growth from IMF (IMF, 2018), because there the real GDP growth is measured, which is already adjusted by the inflation and is not that distorting. GDP/capita is calculated on Purchasing Power Parity and is in current international$. 

The social factors were needed to be changed a bit as well, because there was no indicator by the World Bank on the gap between female and male account ownership, therefore I have created one from the available indicators. This was the case of age distribution as well, hence I have created a variable aggregating the female and male young population from 15 to 29 years old. I did not have to change anything in case of education level, I
have included the primary education level completion rate as a basic education level measurement.

As in some analysis urban population ratio plays an important role, because it is the cause for people sending money home, I have included the annual urban population growth, because simply the urban population ratio can just mean a more developed infrastructure. Population density can be important regarding banking branch penetrations, the less densely populated the country is, the more difficult for banks to cover the whole. Finally access to electricity can be a factor in the least developed countries, however it may correlate with mobile penetration.

From the macroeconomic factors, it is expected to have a negative relationship between GDP/capita and mobile money penetration, as mobile money is more successful in the developing world, however GDP growth is expected to have a positive effect on the dependent variable, because the rapid development of the countries enables the expansion of these new technologies. The unemployment rate is expected to have a positive relationship, as people who don’t work can’t possibly afford to have an account at a formal financial institution.

From the social factors, gender gap should have a positive relation, because of the already mentioned studies on the impact of mobile money on women empowerment. Also, my hypothesis with age distribution is that younger population adopts new technologies faster and more easily than older people, so a positive correlation is expected, however it should be the opposite regarding the education level.

Finally, access to electricity is again a bit difficult to predict, because without the influence of other factors it should have a positive relation, however, the broader access could also mean a bigger development level, hence it can result in a negative relationship as well. I expect positive relations with urban population growth and negative with population density, deriving from the above-mentioned reasons why I included them in my analysis.

To sum up there are 77 observations, and 15 different variables in the analysis. Obviously, many of the development indicators won’t get involved in the model, because 15 variables are too much for 77 observations, I am starting off with all of them to have different options to get the most accurate regression model in the end. What is really important to note that even after the modifications of some variables, there are still some that can
distort the model, such as mobile penetration or banking infrastructure, so the analysis have some limitations.

5.1.2. Preparations of the regression model

All the statistical methodology I use here is based on the Introduction to Econometrics course and the lecture note to the course. (Ferenci, 2016) if not further specified.

First of all, I have examined the correlations between the factors, to have a general idea which variables have a relationship with the mobile money penetration and also to examine initially whether multicollinearity is presented or not, meaning that whether there are variables that correlate strongly with other ones. (for the correlation matrix see appendix 7)

We can see that the largest correlation is between access to electricity and other factors. (with GDP/capita it’s 0.8367, with urban population growth it’s -0.7717, with commercial bank penetration it’s 0.7589 and with primary education it’s 0.7690) Also we can see large negative correlation between Urban population growth and many of the variables (with GDP/capita it’s -0.7488, with primary education it’s -0.6813, with age distribution it’s 0.6311 and with Commercial Bank penetration it’s -0.6971) These 2 factors will probably be excluded from the model because of the multicollinearity.

We can examine the previously created statements about the relationships of the different variables with mobile money penetration. We can see that there is a positive correlation in case of the Financial Institution Account in 2011, the Domestic Remittance Sending and Receiving, the Regulatory Environment, the Unemployment Rate, the GDP Growth, the Population between 15 and 29 years old, the Gender Gap, and the urban population growth; in case of the other factors the correlation is negative.

Commercial bank penetration ended up as a negatively influencing factor, hence we can assume that it is because it doesn’t include the geographic factor. Also, in case of the financial institution account the relation is positive, which is surprising because we assumed negativity, because the more people have financial accounts the fewer people will use mobile money. This distortion however can derive from the fact that we only included the countries with mobile money usage, developed countries, where account ownership is well above 90% are not included. Also, we examined this factor in 2011, so probably with values from 2017, we could get to our initial conclusion. Finally, probably the most important reason for this positive correlation is that according to some early
studies on mobile money, such as Mas-Radcliff, 2010 and Jack-Suri, 2011, early adopters of mobile money are twice as likely to have a bank account. This can be explained by the fact that early adopters are more tech-savvy, and if they already have a bank account, they can understand the convenience of mobile money more, so they are more likely to use it. Furthermore, they can’t execute all the financial services they want to through their already owned account, so it is better for them to look for new solutions.

What is also a big surprise that mobile penetration has a negative relation. It can be the result of the fact that it does not indicate the actual owners of mobile phones, but the different subscriptions, which can be influenced by many factors, including also the high costs of making a transaction with another subscriber from another provider. From the primary variables the regulatory environment has a positive relationship as we expected and also the domestic remittance sending and receiving has the strongest correlation with the independent variable, which was expected as well.

From the secondary factors, all the macroeconomic and social factors have fulfilled our expectations, so do the population growth and density. Electricity ended up negative, however we assumed previously that it is possible, because it is influenced by and correlated with many other variables. Some of the variables have extremely low correlations with the response variable, such as GDP growth (0,0457) and Gender Gap (0,0123) so I most probably will not include these factors in my model as well.

We have to make some further corrections on our variables to proceed towards the model testing. First of all, I examined whether the 2017 financial account has a positive relationship with the mobile money penetration, and however it does, the correlation is extremely low (0,00615) so I will not include in my model at all, but it is important to note that the initial assumption that it can be a factor of the large unbanked population was correct.

The variable commercial bank penetration should be reconsidered from now on as a factor that illustrates the lack of adequate financial services. Also, the other important thing we have to remember that at the time of introduction, financial institution account ownership has a positive relation to mobile money account penetration, as first people with financial institution accounts change to, or try this technology, later followed by the mass population. Unfortunately, we can’t do anything with the distortion of mobile money penetration, but it is really important to handle this variable with limitations as well.
5.1.3. Results of the model

First, I have created standalone OLS models, and got the result that on 90% significance level, regulatory environment, on 95% The percentage of the population aged between 15-29, commercial bank penetration and GDP/capita, and on 99% domestic remittance, primary education, electricity access and urban population growth are significant. Although it does not show us that much information yet, as we could see some of the variables, like primary education, electricity access and urban population growth correlate with many other variables, and also because it is possible that the other variables will end up significant together with other variables in a multiple linear regression model. It was just a good starting point to understand the variables a bit more.

Afterwards I have created a model with all the primary variables, however 2 of the variables (commercial bank penetration and regulatory environment) weren’t significant at all, and there were problems with multicollinearity as well. After adding and omitting variables, I got to the best possible model through OLS (ordinary least squares) linear regression including the regulatory environment, the commercial bank penetration, the financial institution account in 2011, the domestic remittance sending and receiving, and the population aged 15-29. Although one of the variables (Age t19-25) wasn’t significant on any of the significance levels, but the R-square of the model increased to 0,588 from 0,579, and the multicollinearity problem ceased as well. And also, we could see that in the standalone regression this variable was significant.

The only remaining problem was the heteroskedasticity. Running a White-test resulted that the null-hypothesis (the homoscedasticity of the model) has to be rejected on 95% significance level (p=0,03), so heteroskedasticity is presented in the model. Heteroskedasticity can be a problem, as it means that the standard deviations in our model are nonconstant. (Hunyadi, 2016) To eliminate this, I have run the model heteroskedasticity-corrected as well, and I have got the following result:

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>p-value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-14,0543</td>
<td>0,80676</td>
<td>0,0000</td>
<td>***4</td>
</tr>
<tr>
<td>Commercial Bank Penetration (Log)</td>
<td>-0,2023</td>
<td>0,0499</td>
<td>0,0001</td>
<td>***</td>
</tr>
<tr>
<td>Regulatory Environment (Log)</td>
<td>0,9449</td>
<td>0,4337</td>
<td>0,0327</td>
<td>**</td>
</tr>
<tr>
<td>Financial Institution account (2011)</td>
<td>1,5190</td>
<td>0,2281</td>
<td>0,0000</td>
<td>***</td>
</tr>
<tr>
<td>Domestic Remittances (Log)</td>
<td>1,6061</td>
<td>0,2051</td>
<td>0,0000</td>
<td>***</td>
</tr>
<tr>
<td>Population aged between 15-29</td>
<td>7,26788</td>
<td>1,8379</td>
<td>0,0002</td>
<td>***</td>
</tr>
<tr>
<td>R-squared</td>
<td>0,8926</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0,8850</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 ***: the variable is significant on 99%
**: the variable is significant on 95%
We can see that the R-square of the model is 0.8926 meaning that our model fits well, and the dependent variables explain 89% of the variance of the dependent variable. Logically this value grows in case of the addition of new variables, so it is necessary to take a look at the adjusted R-squared value, which only includes the percentage of variation explained by those independent variables that actually has an effect on the dependent variable, penalizing the further addition of unnecessary variables to the model. In our case adjusted R-square is 0.8850, indicating a not too big drop compared to the R-square so we can say that our model has a good explanatory power.

In case of multicollinearity, one of the explanatory variables could be predicted from other explanatory variables, meaning high intercorrelations amongst them, which can lead to misleading results. In our model that none of the variance inflation factor (VIF) is higher than 2 (which would indicate multicollinearity) so there is no disturbing multicollinearity presented.

We can write the linear regression equation as the following:

\[
\text{Mobile Money Penetration (Log)} = -14.0543 - 0.202291 \times \text{Commercial Bank Penetration (Log)} + 0.944913 \times \text{Regulatory Environment (Log)} + 1.51904 \times \text{Financial Institution Account in 2011} + 1.60614 \times \text{Domestic remittance sending and receiving (Log)} + 7.26788 \times \text{Population aged between 15 and 29}
\]

\text{Equation 1: Linear Regression Equation}

To interpret our model with the real variables we can see that the factors that provide the best-fitted model are commercial bank penetration with a negative relation, the regulatory environment, the financial account ownership percentage in 2011, the domestic remittance sending and receiving, and finally the population between 15 and 29 years old.

We can see that except mobile penetration all of the other primary dependent variables eventually ended up in the model. We already stated that mobile penetration is not measured in the best possible way, eventually having a negative correlation with the mobile money account penetration, which is controversial with many of the researches, like Donovan, 2012 and Mas-Radcliff, 2010.
We can clearly see that the regulatory environment is important, and the indicators identified in the GSMA mobile money regulatory index indeed well subscribe the significant influence of the enabling regulatory environment and the market-lead approach that Burns, 2016 described.

The lack of adequate financial services and the population with financial institution account in 2011 have a big positive impact on the mobile money penetration too, as Donovan, 2012 and Mas-Radcliff, 2010 indicated.

Finally, the newly created Age distribution variable that includes the population between 15 and 19 years old ended up having a significant impact on the mobile money penetration as well, that can have a connection with the studies that researched the technology acceptance model and the acceptance of mobile money in the different countries, such as Ezeh and Nwankwo, 2017 in Nigeria and can possibly mean that young people are more open to technological innovations.

5.1.4. Interpretation of the model in Laos

Although we have the linear regression equation, we can’t do a point or an interval estimation because there is no regulatory index for Laos by GSMA, because there is no mobile money provider yet in the country and estimating all the 27 different indicators would be difficult because of the lack of publicly available data. The below table summarizes the figures for all the other variables in Laos and also shows the average of the 77 measured countries and the average of the countries where the penetration of mobile money accounts are higher than 20%.

<table>
<thead>
<tr>
<th>Variable’s name</th>
<th>Value in Laos</th>
<th>Average of 77 countries</th>
<th>Average of MM more than 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Institution Account in 2011</td>
<td>29,06% (2017)</td>
<td>28,28%</td>
<td>29,78%</td>
</tr>
<tr>
<td>Sending or receiving Domestic Remittance</td>
<td>28,87%</td>
<td>35,10%</td>
<td>47,69%</td>
</tr>
<tr>
<td>Mobile Money Regulatory Index</td>
<td>N/A</td>
<td>75,22</td>
<td>77,92</td>
</tr>
<tr>
<td>Commercial Bank Branches</td>
<td>3,19</td>
<td>11,17</td>
<td>9,81</td>
</tr>
<tr>
<td>Population ages 15-29 (% of total population)</td>
<td>29,83%</td>
<td>26,37</td>
<td>27,62%</td>
</tr>
</tbody>
</table>

Table 6: Values of the linear regression variables in Laos

Source: Own compilation, based on World Bank, 2018b, World Bank, 2018c
We can see that the percentage of the financial institution accounts are really similar to the average of the 2011 values of the 77 and to the average of the countries where more than 20% of the population have used mobile money in the last 12 months. It can mean that mobile money would arrive to a really similar environment with an established banking infrastructure, but a not too high account penetration to be a threat to the expansion, and also that the population would be ready for this technology, as we could already see more and more people started to use mobile banking as well.

We can see that the number of commercial bank branches are not too high per 10,000, meaning that there is no adequate financial service offered to the people, that can be an opportunity if we examine the introduction of mobile money to Laos; the introduction could probably satisfy a latent demand.

The current domestic remittance sending is at 28,87%, while the average is 35,1% in the 77 and 47,69% in the narrower 24 countries, but as in Laos there is no mobile money yet, we can possibly conclude that there is a space for expansion. We can see this especially if we take a look at the current way of sending or receiving remittances; only 0,52% of the population send it through mobile phone and 2,15% through a money transfer service, but 11,64% through a financial institution and 6,85% through an over-the-counter service.

<table>
<thead>
<tr>
<th>Sent or received domestic remittances (15+)</th>
<th>28,87%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent or received domestic remittances: through a financial institution (15+)</td>
<td>11,64%</td>
</tr>
<tr>
<td>Sent or received domestic remittances: through a mobile phone (15+)</td>
<td>0,52%</td>
</tr>
<tr>
<td>Sent or received domestic remittances: through a money transfer service (15+)</td>
<td>2,15%</td>
</tr>
<tr>
<td>Sent or received domestic remittances: through an over-the-counter service (15+)</td>
<td>6,85%</td>
</tr>
</tbody>
</table>

*Table 7: Domestic Remittances in Laos*

*Own Compilation, Based on World Bank, 2018b*

Laos has a really young population; 29,83% of the population is between 15 and 29 years old, and we could already saw in the PESTEL analysis that more than 50% of the population is below 25 years old, meaning that soon the youngest people will grow up and can be a potential user of mobile money. (CIA, 2018) This young population is really beneficial regarding mobile money, as young people will accept this new technology easier.

Finally, if we examine the regulatory framework, we can again refer back to the PESTEL analysis, and can see that it is still a bit opaque, but there are initiatives by the government and the UNCDF to make the regulations favorable for mobile money operators and to eventually achieve a financial inclusion goal. (UNCD, 2018a)
To summarize we can conclude that regarding these more external factors Laos could be an ideal location for the introduction of mobile money, as there are no sufficient financial services available, however there is a banking infrastructure, a reasonable percentage of people who already have an account, the population is young so open to innovations, and there is a potential in the remittance sending industry, as less than 1% of the current remittances executed via mobile phones. Also, however there are mobile banking services presented, they are not working properly in every case, so their customers who already realized their needs for these services would eventually turn to mobile money services. The big question is however, whether the regulatory environment will be enabling enough for a mobile network operator to launch a mobile money service or it will have to find an alternative solution with a bank or a fintech company, like it happened in many countries in the region already.

To illustrate the importance of the regulatory environment we have to think back to the country analysis part. In the country analysis part, I showed the different actors of mobile money in Southeast Asia in order to figure out what could be the reason behind the low percentage of mobile money and general account usage, because many of the broader development indicators are similar to – or a bit better than - Sub Saharan Africa or South Asia where mobile money is really successful. In every country mobile money has been introduced differently thanks to the different regulatory environments. In Indonesia and the Philippines, the traditional MNO-based solutions got successful, in Cambodia a bank-lead one, and however in Myanmar there are MNO-lead services there are many fintech solutions, and in Vietnam only Fintech solutions are the popular players.

In Vietnam the regulatory environment is not really favorable, it got a score of almost 70 out of 100, however, in case of the regulations regarding agents it got mainly 0 scores, meaning that non-bank agents are not allowed, and there are restrictions of the services that can be executed by an agent. In addition, Vietnam has no financial inclusion policy. Also, in Myanmar regulations are not too favorable yet, it achieved a score of 74, however it has some agent restrictions as well and its biggest problem is the maximum limits of the transactions and the different requirements, including capital requirements as well. In Cambodia the regulations are really favorable now with a score of 86, however it wasn’t like this all the time, the government eased the regulations in 2017. (Zico, 2017) In the Philippines the score is high (82) and however, there are no available score for Indonesia, we know that the regulatory environment is favorable for mobile money there. (Camner, 2013)
Based on all these it is questionable whether mobile money can be introduced as an MNO-led solution like in the Philippines or Indonesia, everything depends on the regulations, however, it is still important to examine the remaining infrastructural factors among some of the most significant mobile money providers, that were launched mainly by MNOs, even though it is possible that Laos has to choose a bank-led or a fintech-based solution as many of the countries in the region.

5.2. Analysis of further, non-country-specific success factors

5.2.1. Mobile money usage around the world

As an introduction to this subchapter, I have collected some of the main figures in the table below about the presence of mobile money around the world in 2017.

<table>
<thead>
<tr>
<th>Table 8: Mobile Money around the world in numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall mobile money industry direct revenues</td>
</tr>
<tr>
<td>Global Mobile money transactions (by value)</td>
</tr>
<tr>
<td>Global Mobile money transactions (by volume)</td>
</tr>
<tr>
<td>Number of countries mobile money presented in</td>
</tr>
<tr>
<td>Number of mobile money deployments</td>
</tr>
<tr>
<td>Deployments with more than one million 90-day active accounts</td>
</tr>
<tr>
<td>Number of registered mobile money accounts</td>
</tr>
<tr>
<td>Number of active mobile money accounts (in the last 30 days)</td>
</tr>
<tr>
<td>Number of active mobile money accounts (in the last 90 days)</td>
</tr>
<tr>
<td>Number of registered agents</td>
</tr>
<tr>
<td>Number of registered active agents (in the last 30 days)</td>
</tr>
</tbody>
</table>

It can be seen that currently there are 276 mobile money deployments in 90 countries, and 47 of them had more than 1 million 90-day active accounts in December 2017. The overall revenue in 2017 reached 2,4 billion, meaning 1,8 billion transactions, which was worth 1 billion USD in average per day and 31,5 billion USD in total. The number of registered mobile money accounts were 689,9 million with 247 million active users in the last 90 days, and 167,9 million active users in the last 30 days. To serve these users there were 5,3 million registered agents from which 2,9 million were active in the last 30 days. (GSMA, 2018a)
To get an even clearer picture and see how huge these numbers are, it is important to examine the growth of these figures over the years. I have downloaded the data for the last 7 years. We can see that the global total transactions were only $4bn and 193 million transactions in 2011, meaning the volume was 9 times and the value was 7 times bigger in 2017. The value per transaction changed a bit since 2011 from almost $22 to $17 that is the reason behind the not even change of the transaction value and volume.

If we take a look at the account numbers, we can see that only 24% of the accounts were active in the last 30 days and only 36% in the last 90 days. The registered and the active accounts have increased by an average of 50% YoY. We can also see a big increase in the agent numbers. It has also changed YoY averagely by around 50%, however the difference between registered and active agents are not as wide as in case of the customers; more than half of the agents are active.
To understand more deeply the agent number, we can get a measure by dividing the total registered agents by the total registered customers and also the total active agents by the total active customers. The total registered customer number per agent was 1.75 (per 100 customers) in 2017 peaking at 2.03 in 2013 and the total active customer per agents (90 days) were 0.77 (per 100 customers) peaking at 0.91 in 2015.

These pieces of information are important, because as we saw on figure 6, besides the dominance of the MNO and the established partnerships; customer base, and agent network are really important factors regarding the success of mobile money, and also this will serve as a base to understand the numbers of the most successful mobile money providers in the next sub-chapter.

5.2.2. Comparison of 5 significant mobile money providers

<table>
<thead>
<tr>
<th>MM Provider</th>
<th>MNO/Bank</th>
<th>Market share of the MNO</th>
<th>Agent Network</th>
<th>Customers</th>
<th>Number of Partnerships</th>
<th>Competition/ MM market share</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-PESA (Kenya)</td>
<td>Safaricom</td>
<td>71.9%</td>
<td>136 000</td>
<td>27 million</td>
<td>11</td>
<td>-7 players -81%</td>
</tr>
<tr>
<td>MTN Mobile Money (Uganda)</td>
<td>MTN</td>
<td>56%</td>
<td>37 000</td>
<td>5.2 million (active)</td>
<td>7</td>
<td>-7 players -54%</td>
</tr>
<tr>
<td>Ecocash (Zimbabwe)</td>
<td>Econet Wireless</td>
<td>84.2%</td>
<td>30 000</td>
<td>6.7 million</td>
<td>5</td>
<td>-4 players: -97.2%</td>
</tr>
<tr>
<td>Tigo Money (Paraguay)</td>
<td>Millicom</td>
<td>47%</td>
<td>4 000</td>
<td>1.7 million</td>
<td>2</td>
<td>-3 players -91%</td>
</tr>
<tr>
<td>bKash (Bangladesh)</td>
<td>Brac Bank</td>
<td>-</td>
<td>135 000</td>
<td>24.28 million</td>
<td>6</td>
<td>-13 players -77%</td>
</tr>
</tbody>
</table>

Table 9: Comparison of the non-country-specific factors


The above table summarizes the remaining infrastructural factors for significant mobile money providers in 3 African countries with the highest mobile money penetrations, in Paraguay, where mobile money penetration is the highest outside of Africa, and in Bangladesh, where it is the highest in Asia, not counting countries where account penetration is higher than 90%.

We can see that except Bangladesh, in all the countries MNO-led services are the most significant, in Kenya, Paraguay and Zimbabwe the biggest mobile money deployment’s market shares are higher than 80%, and in Uganda it is only 54%, where Airtel is presented as well, also one of the most significant mobile money provider in Africa, and the biggest in Gabon, which, the country with the 4th highest mobile penetration rate.
In order to reach a high market share for the mobile money service, the high market share of the MNO is important as well, in all the countries these MNO-s are the biggest ones.

In Bangladesh, the situation is different. There, the most successful deployment was created by a bank, and has a 77% market share regarding volume and 83% regarding the number of transactions. (bKash, 2018) The reasons for this are on one hand that, the regulatory environment was more favorable for banks to create mobile money services (Quadir, 2015) and on the other hand that there was no significant MNO; Grameenphone had 41% of market share, but the second and third biggest providers had more than 20% as well. (GSMA, 2012) bKash could expand rapidly, because it partnered up with all the significant MNOs, enabling it to reach 98% of the mobile subscribers. (Quadir, 2014)

Besides the market shares, we can examine the customer, agent and partnership numbers as well. Regarding the partnerships, the number is low only in Paraguay, however we can see that only 3 players are there in the market and Tigo Money has more than 90% of market share, so probably Tigo is not as dependent on partnerships as the other providers. The other player has partnered up with banks, fintech companies, international remittance sending companies, and also with other mobile money providers to make their services interoperable.

Also, besides Paraguay the agent network is quite extensive, however the customer/agent number is a lot lower than we could see globally. The reason could be that it does not only depends on the number of customers, but after a certain coverage putting a new agent 2 meters next to another one does not provide a better customer reach.

The main takeaway from this subchapter is that we could have really seen that the dominance of the MNO, and its high market share does really count in addition to the regulatory environment; if these two factors are not met then probably an alternative bank-led or fintech led solution will be the most wide-spread, or the market will be too penetrated.

5.2.3. Implications to Laos

In 2017 Unitel had 50% of market share in Laos, it is the most significant mobile money provider (Vietnam News, 2017), which is really favorable regarding the successful introduction of mobile money to Laos. We could have seen that the best practice of the industry is to rely on the dominance of the MNO, however we have to note that now the
circumstances are a bit different. Even in the annual report of Safaricom, the CEO has highlighted that the new fintech players and their collaborations with the banking sector are really developing, hence they have to invest more and more in innovative solutions, such as on smartphones (already they have a solution: 1Tap) to remain competitive. (Safaricom, 2018) We have to also note that if the regulatory environment will not be enabling, then a possible collaboration between BCEL One and Unitel could eventually lead to the highest mobile money penetration, as we could have already seen BCEL has rapidly growing agent network as well (UNCDF, 2017a)

One factor has not been mentioned besides the factors regarding the perception of mobile money that will be analyzed in the next chapter with a questionnaire, which is the economies of scale. We talked about economies of scale in the case of Kenya, that has a population of 48 million, however Laos is a lot smaller country. Most probably mobile money can be still a success, as for instance Gabon has only 2,1 million people, but a mobile money penetration of 44%. Furthermore, as we could have seen in the theoretical analysis part, mobile money is expanding the most rapidly in West Africa, where there are many other small countries.

5.3. Questionnaire on the perception of mobile money in Laos

As there is no mobile money service introduced yet in Laos, I have created a questionnaire to measure the possible acceptance of mobile money. (see appendix 8) Building on the work of Donovan, 2012, Mas – Radcliffe, 2010, McKay - Pickens, 2010, Ezeh – Nwankwo, 2016 and Baganzi-Lau, 2017, I have identified the ease of use, the quickness of use, the convenience of use, the safety, the accessibility, and the perceived usefulness as main factors in order to the MM service be widely accepted by everyone and could spread around the country. I compared these factors with mobile banking services as well, because they are currently available in Laos.

5.3.1. Demographic distribution of the respondents

I tried to use simple English in my questionnaire and I also got my questionnaire translated to Lao by a Laotian retired person living in Hungary, in order to be completely understandable. Initially I have sent it to his connections, then to university students studying in Hungary asking them to send it home and ask their family and friends to fill it in, and finally I have shared it in some Facebook groups of Lao people. I ended up with 63 respondents, from which 62 are qualified, as one of the respondents is currently not living in Laos and had not lived there in the last 10 years.
We could see that the population of Laos is really young, 51% of the population is below 25 years old (CIA, 2018). In our sample it is true as well, however there are no people below 15 years old. Other age groups, even more than 60 years old are represented thanks to the diverse group I could targeted. Regarding the place of residency 87% of the people are from the capital, Vientiane, and only 3% (2 people) of them are from rural areas. This is not in line with the situation with the real population, as in Laos only 31% of the people live in urban areas. (CIA, 2018)

More female completed the survey than male, and people were generally highly educated. The only person who answered as the highest completion level is primary school is below 18 years old, so do most of the people answered upper secondary school are below 25 years old. We only have 3 people who do not have a degree above 25 years old, and only one of them has only a lower-secondary school qualification.

Also examining the income level we can get to the conclusion that people have a generally high income, although there are many university students in the sample who have an income less than 1 million kip (According to Laotian Times, 2018b, 1,1 million is current the minimum salary, however many people still earn less than that) most of the respondents earn at least the double of it (n=34 for a salary of more than 2,4 million
LAK). In addition, because of the university students, there are some people who are not working (15% who are not looking for, and 11% who are looking for work), however most of the people are working part time (27%) or full time (23%) or are self-employed (13%). There are also 3 retired, and 3 people who are disabled or not able to work in the sample.

Only 2 people out of 62 do not have a smartphone and only 4 people don’t use the internet on their phones. Only 1 person does not have a bank account (but she is younger than 18) and only 9 people does not use mobile banking services on their phones, who have a bank account. 2 people answered that they don’t have any, 29 have 1, 23 have 2 and 9 have more than 2 mobile subscriptions.

To sum up we can see that our sample is quite small (n=62), and however it well represents the Laotian population regarding age, it has many limitations. The respondents are highly educated, have high incomes, mainly live in Vientiane, and have bank accounts (however, we could see only 29% of the population of Laos, aged more than 15 have an account), use internet on their phones, have smartphones and mobile banking apps, therefore it does not represent well the population, but it can serve as an initial point in further researches regarding the success of mobile money in Laos, especially if we refer to a study mentioned by Mas-Radcliff 2010, where researchers found that the average M-PESA user (initially) was wealthier and more educated than an average Kenyan person.

5.3.2. Perception of mobile money

On the following figure we can see the 6 main statements and the distribution of the answers by the 62 respondents. I have asked the respondents to rate these statements regarding mobile money on a scale of 1-5, 1 meaning totally agree and 5 meaning totally disagree. As there is no mobile money service yet in Laos, I had to provide a description of it in my questionnaire (see appendix 8) I have also asked these statements compared to cash and to the services to banks - like “it is easier to use than the services of a bank / cash”, the figures of the distribution of the answers of these questions compared to the initial can be seen in appendix 9.
We can see that 63% of the respondents perceived mobile money as fast to use (44% of them totally agreed with the statement: “It is fast to use”), 15% totally disagreed, 15% disagreed and 16% felt neutral with this statement, resulting that the quickness ended up as the biggest advantage of mobile money according to the respondents. 59% answered that it is faster to use than the services of a bank, and 52% than cash, and only 19% disagreed in case of banks, and 27% in case of cash.

It is a surprising result, as the previous results did not really concentrate on this factor, it was only mentioned by Jack-Suri, 2011 and Donovan, 2012, and also according to Ezeh – Nwankwo, 2016 a study showed that 98% of the M-Pesa users have claimed that M-Pesa is faster than any other method to send or receive money. Besides the reduced remittance sending or receiving time we could have seen a 20-hours drop in travel and waiting time in Nigeria by switching the payment of government social benefits to mobile phones instead of cash. (Demirguc – Kunt et al., 2018)

The second most popular statement - also with 63% of the respondents being agreed (however in this case 32% of the people agreed 100%, and 31% just simply agreed), 11% - 11% totally disagreed and disagreed, and 15% felt neutral – is that mobile money is convenient to use. Here 56% of the respondents answered that mobile money is more convenient to use than cash (26% disagreed) and 53% that than the services of banks (meanwhile 24% disagreed).
We can say similar things about this factor as well than about the quickness. Speed comes with liquidity as poor people many times keep their values in illiquid assets, such as livestock or gold, which could be realized slowly in some cases. Mas-Radcliff, 2010 furthermore found that according to M-PESA users M-PESA is 96% more convenient than other alternatives and what is really interesting is that they referred to a study that – as we could have already seen - showed that an average M-PESA user would be wealthier, more educated (which is a case with our sample as well) and are twice as likely to have a bank account. This can be explained by the fact that early adopters are more tech-savvy, and if they already have a bank account, they can understand the convenience of mobile money more, so they are more likely to use it. This is in line with what we saw in the statistical analysis and what Jack and Suri, 2011 found as well.

Our respondents already have a bank account and even use mobile banking services, so we can assume that they rated the quickness and the convenience this high because of the already perceived advantages of the services of banks compared to cash. If we take a look at the below figure, we can see the number of respondents - out of the 51 people who have used mobile banking services – who cited the following statements alone or together with other statements, as a reason for using mobile banking services. We can indeed see that the convenience and quickness factor were quite common reasons (3 people cited convenience and 2 people quickness as a sole, and 33 convenience and 30 quickness as a reason - together with other reasons - for using mobile banking services.)

![Figure 10: Perception of Mobile Banking in Laos](source: Own figure)

The third most popular reason was that it is easily accessible for everyone, 54% of the people agreed with this statement (35% totally), however 29% disagreed and 16% felt neutral. Obviously more people disagreed (37%) with this statement when they had to compare it to cash and only 39% agreed, however more people agreed (58%) that it is more easily accessible than the services of a bank, and only 18% disagree.
It is in line with the general principles and definition of mobile money, as it is a service offered to the unbanked people, so it has to be more accessible by definition. The only criteria for accessibility is mobile penetration, which is quite low in Laos with only 3.71 million subscribers, meaning only 54.12% of the population. (World Bank, 2018c) It can be perceived as really low, in particularly if we consider that many people have more subscriptions (in our sample 31 people out of 62, so exactly 50% of the respondents). Moreover, we can see this percentage extremely is low if we take a look at the database of the statistical analysis, where the average of the examined 77 countries is 104.51 cellular phones for 100 people and the average of the countries with mobile money penetration higher than 20% is 98.71. For the accessibility, a well-established and expanded agent network is needed, which can probably derive from the market share of Unitel, and also the training of the agents by BCELOne (used by 51 respondents of the questionnaire) has started already. (UNCDF, 2017a)

40% of the respondents agreed that mobile money is easy to use, 21% disagreed with this statement, and here we can see a larger number of people (29%) who neither agreed, nor disagreed. As it can be seen on figure 18, one of the main reasons why respondents use mobile banking services is that it is easy to use (34 people cited as a reason and 3 as the sole reason) Referring back to Mas-Radcliff, 2010 respondents who perceived mobile money as easy to use could do so because they have been already using the services of a bank, which they find easy to use so they perceive mobile money, a similar solution easy as well.

M-Pesa has put a lot of effort to create a simple user interface and also purposely transited the message that it is easy to use. At the introduction they have created a simple solution for simple mobile phones, putting all the functions into the main menu, and creating a simple access for the menu points by USSD codes. Furthermore in 2017 they have introduced 1Tap, that reduced the average steps to finish at transaction from 8. Also, the registration is simple requiring only an ID to be shown. (Mas-Radcliff, 2010)

39% of the respondents agreed that mobile money is cheap to use, in contrast to 19% who disagreed. The number of people who felt neutral was the highest in this case (42%) deriving from the fact that the respondents had no prior knowledge about the prices of mobile money, hence they could have not decided objectively, they could have only relied on their instincts.
Although mobile money has a service fee, it is quite cheap to use. A maximum withdrawal limit of 70,000 Shs ($683) - with a restriction of 140,000 Shs total daily limit - costs 300 Shs ($2.93), and it reaches 1$ at 10,000 Shs. The transfer to an unregistered user is a bit more expensive (maximum 35,000 Shs for 309 Shs), however the transfer for a registered user is a lot cheaper (also with a 70,000 Shs maximum with a fee of $105 – around 1$) (Safaricom, 2018)

We could already see that McKay and Pickens (2010) found by a comparison of 28 banks, that M-PESA is 19% cheaper, than the services of 18 other commercial banks, and also we saw that it can have low transaction cost because contrary to banks it does not have a physical branch, hence no fixed costs are linked to it, and because of the economies of scale it can eventually gain enough revenue to be profitable. Also, in Kenya M-PESA was half or one-third of the price than the similar services, and we also have to note that in Botswana, where the minimum cost per transaction were more than a dollar mobile money could not become that widespread. (Donovan, 2012)

In case of the mobile banking service use, this was the least popular answer as well, and was only chosen by 7% of the respondents as a reason. We have to note that, however, it is not that obvious, mobile money can be eventually cheaper than the use of cash, despite the fees, because of the money people can save, as Dean at al, 2016 found that in case of an income drop, people who did not use mobile money, only cash, had to eventually decrease their spending by 7-10%.

Finally, the reason respondents disagreed the most was regarding the safety of mobile money. Only 29% of the respondents felt that it is safe to use in contrast to the 37% of people who disagreed. 34% of the people neither agreed nor disagreed, probably again because they have no experiences. 8% more, 37% of the people felt that it is safer to use than using cash, however only 27% that, safer than the services of a bank. Many of the people (37%) felt that it is equally safe to use as the services of a bank, which was 26% in case of the comparison to cash.

According to Donovan, 2012 mobile money can be safer, because cash can trigger mugging, and also it can provide safety for women having their own savings on their phones. In addition, according to Ezeh - Nwukamaka 90% of mobile money users felt in a study that mobile money is safer than similar alternatives, however, it was also claimed that in another study by researching the reasons for not using mobile money resulted that 27% of the people did not use it because of safety concerns.
These can mean that people who already use mobile money can feel it safer than people who don’t know too many things about it. In case of mobile banking, people weren’t convinced of the safety of the services as well, only 20 people stated that they use mobile banking because it is safer than using cash, and nobody cited as a sole reason, however this result can be a bit distorting, as the statement “mobile banking is safe to use” itself were not examined, so it is possible that many people consider it safe, just not safer than the use of cash.

5.3.3. Perceived usefulness of mobile money

I am examining the perceived usefulness in a separate sub-chapter because it is a bit more complex, as there is no mobile money service yet in Laos, and because I have created more questions for this topic. To measure it, I used as a base, a similar questionnaire about mobile money perception in Vietnam. (Amin – Cojocaru – Nguyen, 2017)

![Figure 11: Mobile Banking usage in Laos](image)

*Source: Own figure*

I have first asked how often the respondents - who have ever used a mobile banking service - use it for a specific purpose (figure 19), then I asked how often would they use mobile money for the specific purposes (figure 20), in order to analyze the gap between these two values and the additional value mobile money can create beyond mobile banking services.
First of all, we can examine the remittance sending and receiving. Currently most of the people transfer money only every month (34%) or few times a year (29%), however with mobile money they would do so more often, especially they would use it for the reception of remittances (especially internationally – only 24% of the people said that it is unlikely that they would use it for this purpose) This result can derive from the fact that some foreign exchange students from Laos filled in the questionnaire as well, currently studying in Hungary. Also, many of the respondents would use mobile money to send money within Laos; 43% would do so at least weekly, and 34% in every month.

Although paying online is not a traditional mobile money service, however in neighbouring countries we can see it works quite well, for instance with Wing (Wing, 2018) and also in Kenya where as an example it is only possible to buy train tickets with M-PESA, not by bank cards. (Kenya Railways, 2018) We can see that there is a need for online payments, as 32% of the people would do so daily and 31% every week and 15% every month with the help of mobile money. Now only 5% of the respondents pay online daily, 19% every week, and 37% every month.

We can see that however there is a paying system by QR code established in the country, 35% of the people have never payed with their phones in a shop, 23% only few times a year, and 15% only monthly did so. The situation is really similar here with the actual

**Figure 12: Possible Mobile Money usage in Laos**

*Source: Own figure*
need to online payments, as 35% of the people responded that they would pay every day in a shop with their phone using USSD or an app, 23% would do so weekly and 16% monthly.

Already many people pay their bills with their mobile through a mobile banking app, obviously here we don’t really count the daily and weekly, more the monthly activity, which is 34% in case of mobile banking. In case of mobile money the phrasing of the question here is a bit deceiving; “How likely would you use mobile money for the following purposes?” Here obviously people would not pay bills every day, the answer could be interpreted more like that it is likely that they would pay bills with the help of mobile money, resulting that 78% of the people would do so at least monthly (or we can say that it is likely that they would do so)

Finally, 58% of the respondents have never used their mobile banking application for airtime top-up, with mobile money 31% would never use it as well. It is in line with what we have seen in the theoretical background, that airtime top-up is the least popular service of mobile money.

We have to also take a look at the satisfaction with mobile banking applications. Overall 14 of the respondents are dissatisfied with their mobile banking apps, 14 of them are neither satisfied, nor dissatisfied and 22 people are satisfied. 3 people have written a reason, one of them is that still many services are not available on the apps, such as sending money internationally; the other is that many times the app is not available and is really slow; and the third is that not enough banks offer mobile banking apps.

We have to refer back here to figure 18, where we could have seen that the biggest reason people use mobile banking is that they can make financial transactions that otherwise they couldn’t, such as sending and receiving payments and paying online, so we have to keep in mind that even though the results here are not as visible, in case of a person who does not have a bank account and only uses cash, could mean a lot if – by the help of mobile money – he or she could access to new services, that our respondents – however with some limitations, based on the not perfect banking infrastructure of Laos – use already.

5.3.4. Restraining factors that affect mobile money adoption

I have also examined what are the main reasons why people don’t use mobile banking and why people wouldn’t use mobile money services. Before the illustration of the results
it is important to see why people don’t have a bank account generally around the world, based on the database of the World Bank, 2018b.

Lack of enough money is the biggest restraining force, two-third of the people cited it as a reason, and almost 10% of the people as the only reason. 30% of the respondents claimed that they didn’t need an account, and 26% that cost is a big barrier; however, this answer was more popular in Latin-America and the Caribbean. Also 26% stated that they don’t have an account because another family member has one. It is important to note here that a lot more women chose this answer than men. 22% of the people worldwide indicated distance as a main barrier, 20% lack of documentation, 16% the distrust of financial institutions and only 6% identified religion as a barrier that hamper the ownership of an account. (Demigruc et al, 2018)

We can see that mobile money can have a solution to some of these issues. It is generally cheaper to use than the services of a financial institution, which addresses two of the main restraining reasons (the not enough money and the accounts are too expensive). Likewise, it is more accessible in remote areas, providing a solution to the “financial institution is too far away” reason. Moreover, bigger MNOs have an already established trust by the customers, that can eliminate the trust problem. Finally, as it is cheaper and have more “branches” around the country, not necessarily only one person from the family will use it, but it can be accessible for other members as well.

We have to note that lack of necessary documentation is a problem in case of mobile money registration as well, in a survey on why people use OTC services instead of creating their own mobile money account, the biggest portion of the respondents provided the lack of state ID or other required document as the main reason. Although it is important that in contrast to the services of formal financial institutions, these people could still use OTC services, so eventually benefiting from the services of mobile money. (Mann – Mutemi, 2015)

In case of mobile banking there were 2 people who answered that they don’t need it, 1 that he or she has never heard about it, 1 that it is too complicated to use, somebody did not have a smartphone that is why he or he or she couldn’t use it, only 1 person said as an additional reason that he or she prefers using cash, and lastly 1 person also added an own reason that it does not fit for purpose.
If we examine the reasons in case of mobile money, we can see that 31% of the people did not answer for this question, possibly meaning that they would like to use mobile money for all the services listed above. 27% of the respondents prefer using cash, and 17% of them prefer mobile banking services. As we can see here, the perception of mobile money for people is that it is complicated, so it would be important for a mobile money provider to create an image that it is actually not more complicated than using the services of a bank.

5.4. Limitations of this study and further research opportunities

As mobile money was introduced in 2007 in Kenya, which was 11 years ago, we can’t just analyze the successful introduction of it to Laos without keeping in mind that in the last years many things have changed especially regarding technology and many new actors entered the market bringing new ideas and solutions. I was trying to mention these factors where they were relevant, however still the identified success factors were based on older studies, because they were available, and because that is when M-PESA was born, that is why I find it important to summarize them here.

First of all, it still does not have the capability to reach the poorest people. To expand even more it is inevitable to figure out how to reach out people in the most remote areas. Resulting from the structural differences - however successful examples for the collaboration of mobile money providers and formal financial institutions are presented – mobile money revenues are based on transaction costs, in contrast to banking services.
that are many times priced float-based, therefore the partnerships can be challenging. Also, there are difficulties coming from the scale, as providers have to find the perfect pricing method to reach the mass market but to still remain profitable. In addition, technology was the factor that enabled mobile money to grow, however now it switched to become one of the biggest threats, as new technologies, and different fintech companies are evolving and entering the markets. Furthermore, a big challenge is to find the perfect agent and liquidity figures; too many agents means less profit, but if there is no agent in a proximity of the customers, then they will turn to other solutions. It is also questionable how liquid an agent should be.

Competition can be a challenge, but we saw examples where collaboration was a really good strategy. Further collaboration with the different actors of the ecosystem, like banks or fintech companies, even retailers - to leverage the agent network – are essential to maintain the leading position. Also, more and more mobile money providers are being created, interoperability amongst them can be a solution. Technology can be seen as a challenge; however, the expansion of smartphones and mobile internet can be an opportunity for more innovative ideas. Technological development in 2007 was that many people, even in remote areas had a mobile device, now it is even more obvious that people have mobile devices, smartphone penetration will become a key issue. Offering solutions for smartphones to the existing users and figuring out a way how to offer solutions to the new users - the BoP customers - could be an opportunity.
6. Conclusion

In my thesis I was looking for answers for the question: “What factors are necessary for the successful introduction of mobile money to Laos?”

After the illustration of the theoretical background of mobile money and financial inclusion, and the country analysis of Laos, I have tried to provide a more holistic analysis of the success factors, because besides Mas-Radcliff, 2010 most of the already published studies were concentrated on a certain group of factors.

After identifying all the possible success factors based on literature review I analysed that which are the factors that are indeed significant, and what is the current situation in Laos regarding these situations, in order to get a clearer picture on the circumstances of introduction of mobile money to the country.

To summarize the statistical analysis part found - with the help of a multiple variable linear regression - that commercial bank penetration, financial account penetration at the time of the introduction of mobile money (in my analysis I measured 2011), regulatory environment, the share of the young population between 15-29 years old, and domestic the remittance sending and receiving are together can describe best the mobile money penetration in a certain country. Analysing these results, I got to the conclusion that the environment in Laos is favourable for the introduction, all these factors are presented, only the regulatory environment is questionable.

In addition to the regulatory environment the other really important factor is the dominance of the MNO, because if there is no MNO with high market share then other bank-led or third-party-led solutions will expand, resulting in the fragmentation of the market, and if interoperability is not established than eventually the number of mobile money users will be low. In case of Laos one of the best possible scenario would be the collaboration between BCEL One that already has a mobile banking application and an extensive agent network, and Unitel, the biggest MNO in the country, that is currently planning the introduction of mobile money to Laos.

To summarize the questionnaire that I have conducted with people from Laos we could have seen that people perceive mobile money as fast, convenient to use, easily accessible, however not too cheap and safe. This derives mainly from the fact that the respondents all have a bank account. We can conclude that the biggest gap between the current use of mobile banking services and the need for the use of mobile money services are in online
and merchant payments, meaning that the vast majority of the respondents would be willing to shift from cash to an alternative solution, however the already available infrastructure is not favourable for this. There are restraining factors for the expansion of mobile money as well, like many people prefer cash or the mobile banking services so far, however we saw that the operation of it is not perfect, so that mobile money possibly could improve the user experience.

In my thesis I wanted to provide a more holistic approach by identifying and analyzing all the possible success factors regarding the introduction of mobile money to Laos. Obviously, it has limitations, as it is not an extensive list, other factors could be identified as well. Other limitations are that in the statistical analysis in some cases not the best possible variables were chosen, for instance in the case of mobile phone penetration, which ended up having a negative relationship with mobile money penetration which is controversial with the available literature about the topic. These distortions happened because of the lack of available data, hence analysis based on other sources than the World Bank Database could lead to a more punctual result. The illustrated questionnaire has limitations as well, because of the geographical distances, only 63 people could have been reached, and the respondents were more educated, wealthier, and earned more than the average population of Laos. Furthermore, almost all of them had smartphones, and had bank accounts, which is not the case of the population.

Further research opportunities could be the analysis of the current situation, whether it is still the best option if a dominant MNO introduces mobile money to a certain country, or it will eventually shift to Fintech companies or innovative mobile banking apps on smartphones. Also, regarding smartphones, it is really important to see that mobile money could spread because the simple technology it used on old phones. A question is whether this traditional form is still successful or mobile money providers have to switch to other more innovative solutions. Furthermore, we could have seen that corruption is a really worrying thing in Laos, it could be interesting to see how the introduction of mobile money could help on it, or to see the other side, how much corruption actually impede the introduction of mobile money. Finally, the questionnaire could be repeated as well with a biggest sample including not only people with internet connection and mobile banking account, to see the results more accurately.
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## Appendix

### Account Ownership (15+) 2017

<table>
<thead>
<tr>
<th>Countries</th>
<th>Account</th>
<th>Financial Inst. Account</th>
<th>Mobile Money</th>
<th>3 Years Growth</th>
<th>Financial Inst. Account</th>
<th>Mobile Money</th>
<th>6 Years Growth</th>
<th>Account</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>82%</td>
<td>56%</td>
<td>73%</td>
<td>9%</td>
<td>1%</td>
<td>25%</td>
<td>93%</td>
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<td>59%</td>
<td>33%</td>
<td>51%</td>
<td>33%</td>
<td>18%</td>
<td>44%</td>
<td>189%</td>
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<tr>
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### Appendix 1: Mobile Money usage of countries that have higher than 20%

*Source: Own Compilation, based on World Bank, 2018b*

### Appendix 2: Percentages of Mobile Money and Financial Institution account only

*Source: Own Compilation, based on World Bank, 2018b*
Appendix 3: Country Risk in Laos
Source: Own Illustration, based on World Bank, 2018d

Appendix 4: Most Problematic Factors for Doing Business in Laos
Source: World Economic Forum, 2018

Appendix 5: Economic Indicators of Southeast Asia
Source: Own Compilation, based on World Bank, 2018c, IMF, 2018

Appendix 6: Descriptive Statistics of the Variables
Source: Own Compilation, based on the GRETL output
Questionnarie on Mobile Money in Laos

Demographic Questions:

1. Have you lived in Laos in the last 10 years?
   - Yes
   - No

2. Gender
   - Female
   - Male

3. How old are you?
   - 15-18
   - 18-24
   - 25-29
   - 30-44
   - 45-59
   - 60 or more

4. Where do you live?
   - Urban (Vientiane)
   - Urban (Other than Vientiane)
   - Rural

5. What is your highest education level?
   - No schooling
   - Primary school
   - Lower secondary school
   - Upper secondary school
   - Bachelor’s degree
   - Master’s degree
   - Doctorate

6. What is your employment status?
   - Self-employed
   - Employed, working full-time
   - Employed, working part-time
   - Not employed, looking for work
   - Not employed, not looking for work
   - Retired
   - Disabled, not able to work

7. What is your monthly income?
   - Less than 1 million LAK
   - 1-1.7 million LAK
   - 1.7 million LAK – 2.4 million LAK
   - 2.4 million LAK – 3 million LAK
   - More than 3 million LAK
8. How many different mobile subscriptions do you have?
   - 0
   - 1
   - 2
   - More than 2

9. Do you have a smartphone?
   - Yes
   - No

10. Do you use the internet on your phone?
    - Yes
    - No

11. Do you have a bank account?
    - Yes
    - No

**Questions regarding Mobile Banking**

“Mobile banking is a service provided by a bank (or other financial institution) that allows its customers to conduct financial transactions using a mobile device. It includes doing the following activities on your mobile phone in case of having a bank account:
- Transferring money
- Paying online
- Paying in a store (with the help of a QR Code)
- Checking your bank account’s balance or making another inquiry
- Paying your bills
- Online saving accounts
- Paying back loans (including credit card loans as well)”

12. Have you ever used your bank’s mobile banking service?
    - Yes
    - No
    - My bank doesn’t have a mobile banking service/or I don’t know about it

*If the answer is no, jump to question number 18*

13. Which mobile banking app have you already used? (Select all that applies) (Optional)
    - BCELOne or OnePay
    - LDB (Lao Development Bank) mobile banking
    - LaoVietBank Smart Banking
    - JDB Yes
    - Kapao E-Wallet (by New Concept)
    - ACLEDA Unity Thanchai
    - Other…

14. How often do you use mobile banking services for the following purposes? (1: Never, 2: Few times a year, 3: Every month, 4: Every week, 5: Daily)
    - Transfer money
    - Pay online
    - Pay at a store (with QR code)
    - Bill payment
    - Airtime top-up
15. Why do you use mobile banking service? (Please select all that applies)
- It is easier to use than using cash
- It is faster to use than using cash
- It is more convenient to use than using cash
- It is cheaper to use than using cash
- It is safer to use than using cash
- I can make financial transactions that otherwise I couldn’t, using cash only (for instance transferring money, paying online)

16. How satisfied are you with mobile banking services?
- Totally satisfied
- Satisfied
- Neither satisfied nor dissatisfied
- Dissatisfied
- Totally dissatisfied

17. If you weren't satisfied, what is the reason of it? (Please provide your answer in English if possible) (Optional)

Jump to question number 19

18. What is the main reason behind not using a mobile banking service?
- I have never heard about it
- I don’t have a smartphone
- I have a smartphone, but I don’t have internet connection on it
- I prefer using cash
- It is too complicated to use it
- I don’t need it
- Other..

Questions regarding Mobile Banking

“Mobile money is a tool that allows you to make financial transactions using cell phone technology. It sounds similar to mobile banking; however, the main difference is that you don’t need to have a bank account to make these transactions. Currently in Laos there is no mobile money service available. The most common features of mobile money are the following:

- To use mobile money a simple mobile phone is enough (a smartphone is not necessary, you can use it with USSD codes)
- There are local agents everywhere, even in rural areas, where you can register (with your mobile number and National ID) and cash in (similarly to topping-up your airtime) and do other transactions (like sending money to a friend) with only providing your mobile number
- Local agents can be individuals, but many times they are small shops, there is no need for a bank branch”

19. Have you ever heard about the term “mobile money”?  
- Yes
- No

20. Based on this description would you be interested in using mobile money in Laos?
- Yes
- No
21. I have listed several transactions that you can do with mobile money. How likely is it that you would use mobile money for following purposes?
(1: very unlikely, I would never use it, 2: Unlikely: I would use it few times a year, 3: It is not that likely: I would possibly use it in every month, 4: Likely: I would use it in every month, 5: very likely, I would use it every day)

- Cash in
- Cash out
- Send money to family and friends within Laos
- Receive money from family and friends within Laos
- Send money to family and friends internationally
- Receive money from family or friends internationally
- Pay online
- Pay in a shop (with USSD code or mobile application)
- Pay bills
- Buy airtime

22. If your answers were unlikely at most of the questions: why wouldn't you use mobile money? (Select all that apply) (optional)
- I prefer cash
- It sounds too expensive for me
- It sounds too complicated
- I prefer my mobile banking app
- I don’t need it
- I don’t trust it
- Other…

21. Based on what you already know, what is your perception about mobile money? In what extent do you agree with the following statements? (1: Totally disagree, 2: Disagree, 3: Neither agree, nor disagree, 4: Agree, 5: Totally agree)
- It is easy to use
- It is easier to use than using the services of a bank
- It is easier to use than using cash
- It is convenient to use
- It is more convenient to use than using cash
- It is more convenient to use than using the services of a bank
- It is cheap to use
- It is cheaper to use than using cash
- It is cheaper to use than using the services of a bank
- It is fast to use
- It is faster to use than using the services of a bank
- It is faster to use than using cash
- It is safe
- It is safer to use than using the services of a bank
- It is safer to use than using cash
- It is easily accessible for everyone
- It is more easily accessible than cash
- It is more easily accessible than the services of a bank

Appendix 7 Questionnairie on Mobile Money in Laos
Source: Own Compilation
### Appendix 8 Correlation matrix of the variables

*Source: Own figure, based on the GRETL output*

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**Financial Inst. Acc.**

**Remittance Sending**

**Mobile Penetration**

**C. Bank Penetration**

**Regulatory Env.**

**GDP/Capita**

**Unemployment Rate**

**GDP Growth**

**Age 15 to 29**

**Gender Gap**

**Primary Compl. Rate**

**Urban Pop. Growth**

**Population Density**

**Access to Electricity**

**MM Account**
Appendix 9 Perceptions of mobile money by the respondents compared to the services of a bank and cash

Source: Own Illustration