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Faculty of Business Economics

Master of Management

Masterthesis

E-KYC as a facilitator for financial inclusion through mobile money service. The case of refugees in Jordan

Najeeb Awni Issa Haddad

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization International Marketing Strategy

SUPERVISOR :

Prof. dr. Koenraad VANHOOF

CO-SUPERVISOR :

De heer Wouter FAES



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Preface

With this master thesis I finalize my studies of Management with the specialization in International Marketing at Hasselt University. The realization of this master thesis required a great deal of effort from myself, but also from several others assisting me during this whole process. In particular, I would like to thank my promoters Prof. Koen Van Hoof and Mr. Wouter Faes for the support and guidance. Thank you for the encouraging words and the constructive criticism when needed to push me to go the extra mile.

Furthermore, I would like to thank Ms. Salwa Badwan and my managers at Arab Bank for their great support during my work on this dissertation.

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Najeeb Haddad

Amman, September 2016

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Abbreviations

AML	<i>Anti money laundry</i>
ATM	<i>Automated Teller Machine</i>
API	<i>Application programming interface</i>
CBJ	<i>Central Bank of Jordan</i>
CDD	<i>Customer Due Diligence</i>
CTF	<i>Counter terrorism Financing</i>
E-KYC	<i>Electronic Know Your Customer</i>
FINTECH	<i>Technology Integrated in finance</i>
ICT	<i>Information and communication technology</i>
IIF	<i>Institute of international finance</i>
MNO	<i>Mobile Network Operator</i>
POS	<i>Point of sale</i>
P2P	<i>Person to Person</i>
P2B	<i>Person to Business</i>
P2G	<i>Person to Government</i>
B2B	<i>Business to Business</i>
RBI	<i>Reserve Bank of India</i>
RegTech	<i>Regulatory Technology</i>
RTGS	<i>Real Time Gross Settlement</i>

Abstract

The main objective of this research was to examine how a new technology such as EKYC as a facilitator for financial inclusion can be implemented. We did this by asking as major questions: What are the practical advantages and disadvantages for an e-KYC system within the financial industry? What are the main challenges for it? How will it benefit the refugees' economy in Jordan?

Thus we looked at what the challenges are to implement it and which benefits its presents to the different involved parties, such as Central Bank of Jordan, Mobile Money Service Providers, Banks and users.

This research is important for a couple of reasons. In general, there is a lack of research data in this area as it is a new area of study and since innovative technologies in the financial sector are relatively new as well. The importance of the study also stems from the position of the Central Bank of Jordan (CBJ) in the case we have investigated since the CBJ just recently has implemented a new strategy for financial inclusion in the country.

Electronic identity which can be used as a know your customer tool could serve as a means to compensate for the lack identity documentation due to its ability to store biometric data. This research examined the main challenges in implementing a digital tool for proofing identity, and how it can accelerate financial inclusion in Jordan especially for refugees. These challenges are situated in areas such as legal policies, regulatory compliance, privacy, technical and trust. Moreover, this study contributed to the existing literature where it mainly focuses on financial inclusion across different countries and segments, however, this master thesis aims to gain a deeper understanding and linked how new technologies can accelerate financial inclusion by overcoming ID challenges.

Data was collected through semi-structured, in-depth interviews. In total, 3 cases were incorporated, comprising the Central Bank of Jordan, a Bank and a Mobile Payment Switching & Clearing Platform system provider. Based on the full transcripts of the interviews, case study research was employed to analyze the data. First, a within-case analysis was performed for each

individual case, indicating importance and challenges which are specific for a given party. In addition, the findings across cases were compared by means of a cross-case analysis, revealing commonalities as well as disparities between cases.

The findings reveal the main challenges financial service providers are facing in financial inclusion and for implementing e-KYC system, whereby a distinction is made between internal- and external- challenges. Internal challenges are challenges financial institution face within the firm. This master thesis identifies four main challenges: regulations, security, internal IT infrastructure, and experience. External-challenges, on the other hand, are challenges financial institutions face while collaborating with their ecosystem. Common external challenges are: culture, environmental, technical and laws. The proposed suggestions comprise the determination of the role of the government, establishing regulatory sandbox and Fintech Hubs to test and innovate, the organization of open discussion conferences and events, and the need to establish a (trustful) relationship between partners.

Chapter 1 Introduction

This chapter introduces the research main problem of inadequacy of banking services in third world countries such as Jordan. It also defines financial inclusion and mobile money services then highlights some facts about financial exclusion and the barriers and challenges for people without recognized IDs such as refugees to join the mobile money world and benefit from its services to reduce their suffering.

Additionally, current KYC regulations is discussed with regards to financial inclusion for refugees and how EKYC can be a better enabler to enhance the process and increase the rate of onboarding of unbanked refugees to financial services.

Finally, this chapter will be concluded with the dissertation problem statement and the relevant sub-questions.

1.1 Problem Background

The UNCDF report of January 2009 illustrates that the financial inclusion has been of an importance in third world countries since the early 2000s after the research findings about financial exclusion and its direct correlation to poverty in third world countries. It has shown that, the banking services are still inadequate to include people from full participation in accessing financial services such as saving, insurance, payments, short and long-term credit, pensions or local money transfers. The financial inclusion is now a common objective for many central banks among the developing nations as it addresses the constraints of financial exclusion. Ways of overcoming financial exclusion have been cited through which the introduction of financial inclusion facilities to an easy way (Kempson and Dominy, 2003).

There is at least one billion people in developing countries who lack any form of officially recognized ID. This problem disproportionately impacts rural residents, poor people, women, children, and other vulnerable groups in Africa and Asia. (World Bank Group, GSMA, Secure Identity Alliance, 2016)

Maha Bahou, Executive Manager for Payment Systems & Domestic Banking, Central Bank of Jordan emphasized in an interview with Finextra on 31 May 2017: although the penetration rate of mobile phones subscribers is at 140% and for smart phones at 70%; the financial inclusion rate is still only at 24.6%. as such, Jordan decided to leverage on Mobile Payment Service Providers, yet the issue of the lack of proper identification for certain individuals such as refugees is still facing regulators and policy makers. In addition to refugees, 39% of the population are non-national residing in the country where most of them lack proper identification documents allowing them to open a bank account.

The lack of proper identification documents is significant challenge for refugees, and this research will investigate this challenge, and study how an innovative solution such as digital identity can solve it, and what are the major challenges will it face.

1.2 Financial Inclusion and Mobile Money

1.2.1 Financial Inclusion

Financial inclusion has become a subject of growing interest for researchers, policy makers, and other financial sector stakeholders due to its positive impact that has been noticed in different countries around the world, especially in the developing ones. Without all-inclusive financial access, “individuals and firms need to rely on their own limited resources to meet their financial needs, such as saving for retirement, investing in their education, taking advantage of business opportunities, and confronting systemic or idiosyncratic shocks.” (Demirguc-Kunt et al, 2008).

Financial Inclusion can be defined as the delivery of financial services, including banking services and credit, at an affordable cost to the vast sections of disadvantaged and low-income groups who tend to be excluded. Financial services include many various options such as: access to savings, loans, insurance, payments and remittance facilities offered by official financial system. (Dixit and Gosheh, 2013).

Financial inclusion is also a multi-dimensional concept with heterogeneous views prevailing across the globe. “The motto of financial inclusion is to provide affordable financial services to

all sections of society and in general to improve the standard of living.” (Lenka and Sharma, 2017). It proves to be a complementary part of economic growth as it is not only assures the financial sector development but also spreads affordable financial services. Broadly speaking, it is “the process of allocation of the financial services to the weaker section of society at an affordable cost.” (Lenka and Sharma, 2017). According to the 2014 World Bank estimates, there are still around 2.5 billion people in the world who do not have a bank account.

Rangarajan Committee (2008) viewed financial inclusion as “The process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost”

In a simpler term, financial inclusion is about including the excluded in the financial system of the country, and to ensure that their financial & social security needs are taken care of through appropriate financial service providers.

Below diagram briefly illustrates the essential offerings of financial inclusion (See figure 1):



Figure 1: Financial Inclusion Offerings “source: Rangarajan Committee Report”

1.2.2 Mobile Money

In recent years, we have observed a flourish of a new tool, namely mobile money, which allows the realization of financial inclusion at an unknown speed. Most financial inclusion models indeed use either credit-led or saving-led systems. (Donovan, 2012). Mobile money can be perceived as “a third approach to financial inclusion that focuses on building the basis for payments upon which a wider set of financial services can be developed.” (Mas & Radcliffe, 2012).

Mobile money is considered a key instrument in improving financial inclusion and opens opportunities for lowering costs of services that are offered to the financially underserved in society (Alampay and Bala, 2010; Duncomb and Boateng, 2010). The Bill and Melinda Gates Foundation specifically urges promotion of digital access as the best route to financial inclusion (K. Wilson and R. Krystalli, 2017).

Kenya is now leading the world in mobile money usage, with high active accounts than adults in its population. The total amount of transactions made by mobile phone in 2013 was nearly \$24 billion, more than half the country’s GDP (See Figure 2).

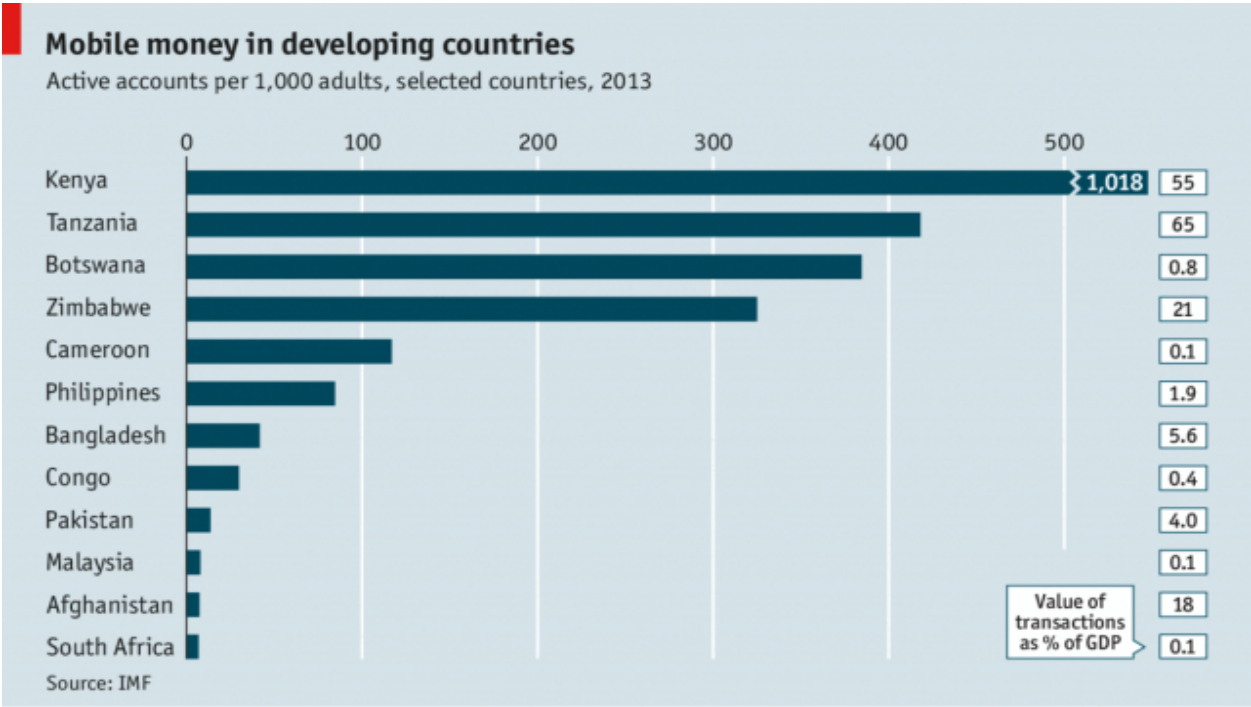


Figure 2: Mobile money in developing countries

This mobile payment process in Kenya, M-PESA, was launched in 2007. A year later it expanded to Tanzania. While uptake there has not been as strong, the total transaction value is close to that of Kenya. As mobile phones have become more widely available as mobile payment had a positive impact that helped to reach the unbanked. In at least eight countries, including Congo and Zimbabwe, more people have registered mobile-money accounts than traditional bank accounts. (The economist, 2016).

Digital and mobile enrolment can make a difference in financial inclusion such as empowering people in the emerging markets, allow them to gain access to the global payment system and perceive value of e-commerce. (S. Chisti and J. Barberis, 2016).

There are many advantages for using mobile money services, such as:

- **Ease of Use:** Mobile money helps people pay for any type of goods and services; and being able to transfer money from almost anywhere even if they are no bank office near them.
- **The Unbanked:** the enclosures of mobile money services will go a long way to classify the needs of the unbanked, under banked, and the unhappily banked.
- **Boosts Economic Growth:** mobile devices and with mobile network operation services sprinkled anywhere than traditional banks, availability of mobile money services in different strategic locations is crucial for long-term adoption and widespread use of such services, boosting economic growth and social development on both the micro and macro level.

“Mobile financial services are among the most promising mobile applications in the developing world. Mobile money could become a general platform that transforms entire economies, as it is adopted across commerce, health care, agriculture, and other sectors.” (Donovan, 2012).

1.2.3 JoMoPay Switch

As per the Consultative Group to Assist the Poor (CGAP), Jordan’s infrastructure is well-placed to support domestic payments digitization. There is a high level of interconnectivity between mobile services and the broader payments ecosystem, with interoperability between e-money

issuers as well as interconnectivity with the broader ecosystem (ATM switch, bill payment platform, cards acquirers).

At the end of 2012, the Central Bank issued a request for proposal to build a switch. ProgressSoft, a payment solution provider based in Jordan, won the contract after proposing to roll out their mobile payment switching solution under the brand name JoMoPay. The Central Bank acquired the switch technology for free, as ProgressSoft offered it as a gift to the Kingdom of Jordan¹⁷. The switch was built by the end of June 2014.

JoMoPay is a real-time payment switch for processing and switching mobile financial and nonfinancial transactions in STP basis and routing messages between multiple mobile payment service providers. It uses industry standard protocols, such as ISO 8583 for message exchange, along with other proprietary message formats. It enables a wide range of use cases, including P2P, P2B and bill payment, P2G, G2P, B2B, international remittances, merchant payment, airtime top-up, cash-in and cash-out. It can support up to 100 transactions per second. It is operated and managed by the Central Bank of Jordan. All PSPs and banks offering mobile banking and / or mobile money services have to connect to JoMoPay. All mobile network operators also have to connect to JoMoPay for the provision of USSD access. To ensure full interoperability of the mobile money ecosystem, JoMoPay has integrated with the following payment systems in Jordan: eFawateercom, Jordan’s bill presentment and payment solution, the RTGS (Real Time Gross Settlement System) and JoNet, the national ATM switch.(GSMA, 2016)

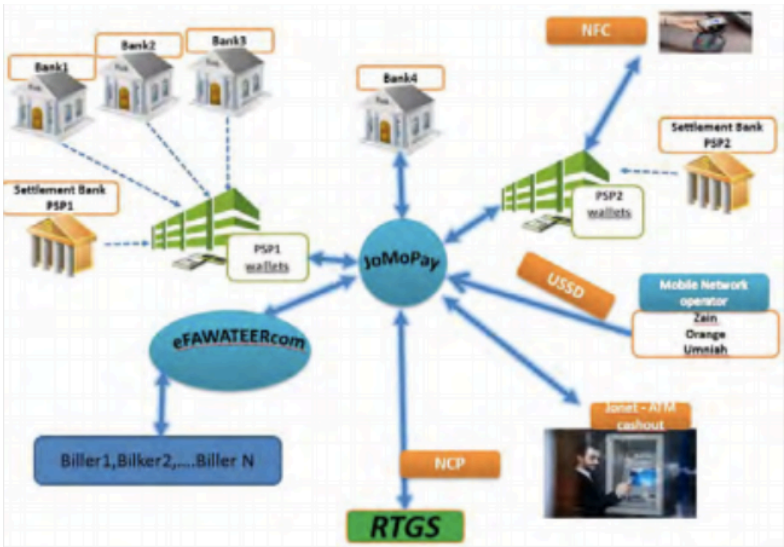


Figure 3: JoMoPay Ecosystem

According to Goldstein (2015), JoMoPay facilities also supports clearing cut-off times and settlement integration schedules. Upon clearing session completion, the system performs the netting of the transactions that were exchanged during that session and generates a Net Clearing Position (NCP) report. This report serves as a basis for final settlement, which is achieved by integrating with the Real-Time Gross Settlement (RTGS) system as shown in Figure 4. JoMoPay allows the Central Bank to assume its regulatory role by operating and monitoring the system, validating payments against imposed rules and enabling processors to offer smooth operation and faster response time for the parties involved in the transaction. Furthermore, the system reports any violation on the imposed validations; it also enforces Know Your Customer (KYC) methodology and seamlessly integrates with external systems such as RTGS, Core Banking System (CBS) and MNO systems.

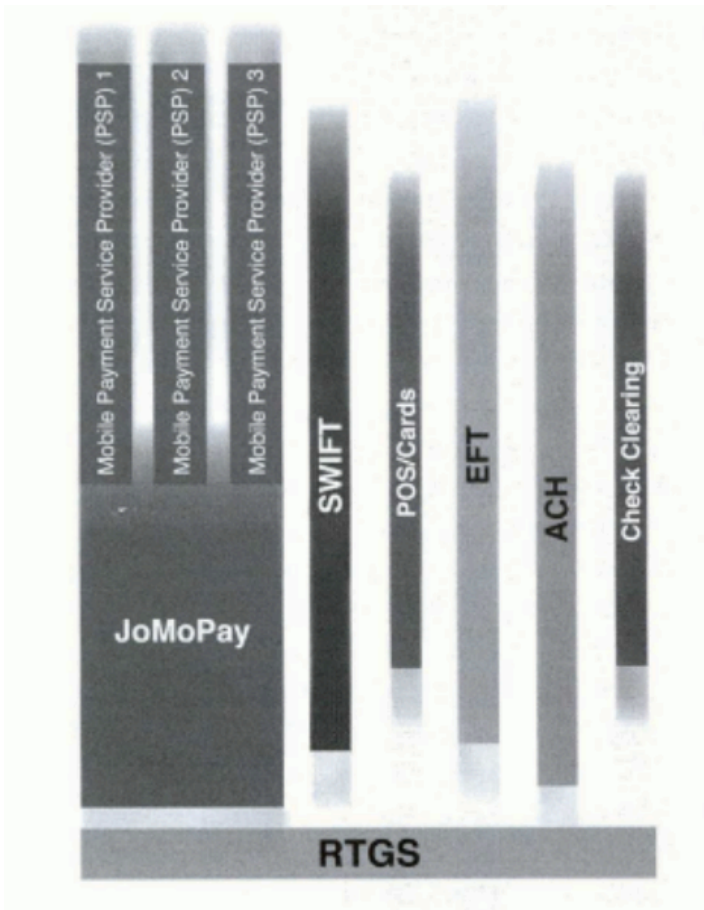


Figure 4: JoMoPay Architecture

1.3 Financial inclusion and refugees in Jordan

By the end of 2015, an unprecedented 65 million people around the world have been forced from their homes due to several reasons. Among them there are 21.3 million refugees, of whom 45% are in the productive age bracket, half of them are women. Six out of ten refugees have been living in protracted displacement situations for more than 10 years, and two thirds have self-settled in urban areas (UNHCR & Social Performance task force, Public comment July 2016). According to UNHCR study; MENA (Middle East and North Africa region) hosts 37% of the refugee population of the world, Jordan being the third country in the region in numbers of hosted refugees. (See figure 3).

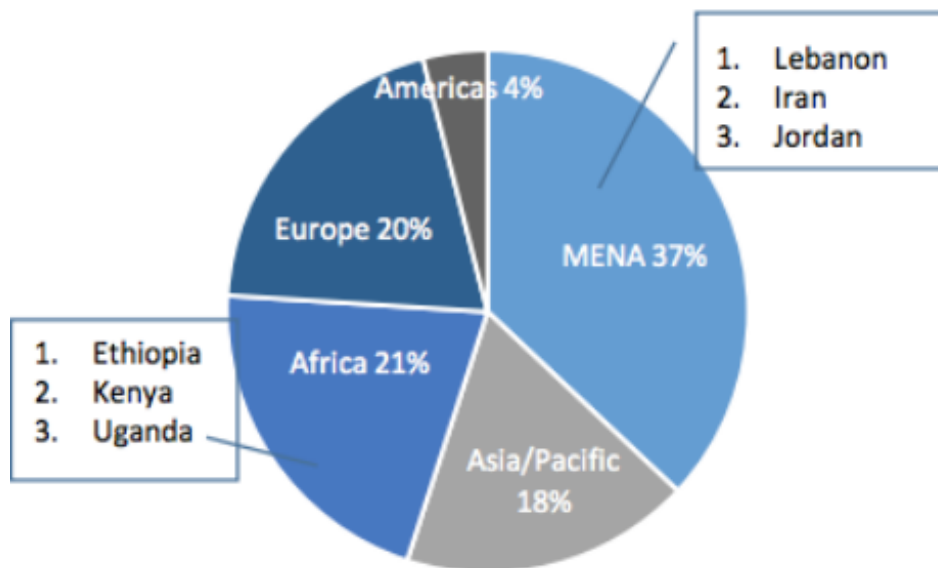


Figure 5: Regions Hosting Refugees

Financial inclusion is considered as a huge challenge in the Middle East and North Africa. 57% of the adult citizens in the region or up to 180 million Arab citizens do not have access to formal financial services or do not have bank accounts or credit accounts. (The Jordan Times, 2015)

Around 630.000 refugees running away from their conflict-affected countries, mainly Syria and Iraq, many are holding up in Jordan. The Jordanian government must deal with a completely new economic outlook presented by this emergency case.

Refugees in Jordan and the underprivileged Jordanian people are receiving financial help from

indirect resources such as:

- Their relatives
- The government
- International organizations such as NGOs.

There dependency on such resources make them less active in the usage of financial services themselves. However, they remain deprived of access to proper financial services.

The Jordanian government, banks and several NGOs have started developing projects to include the refugee population into the financial system through digital tools. PHB Development and The Consultative Group to Assist the Poor (CGAP) have recently worked with Die Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in Jordan to design GIZ's technical assistance plans to improve access to remittances and other financial services through digital solutions.

The project was scheduled to start in January 2016 and to end in 2018, with a total contribution of up to 2.3 million euros by the German Federal Ministry for Economic Cooperation and Development (BMZ) (Breul, 2016) and with the help of the Belgian Federal Government as well. Currently, refugees' access to financial services can be considered limited, as UNHCR uses IRIS scanning recognition at ATMs, and World Food Program (WFP) and Care International use ATM Cards to disburse assistance cash. These two schemes are provided by innovative banks with a strong sense of their corporate social responsibility. All of above shows that there is a clear will from the Ministry of Planning and International Cooperation to respond to the refugee's crisis, however, they still lack a full access to financial services.

1.4 Problem Statement

This leads us to state that the problem statement we investigate in this dissertation is the following one:

How can EKYC facilitate the financial inclusion of unbanked and under banked people in Jordan, particularly the poor and refugees residing in the country?

This problem statement has several sub-questions to be answered:

1. What is the status of financial inclusion in Jordan?
2. How do the rate compared to the e-KYC model?
3. Which technical, cultural, regulatory and other requirements have to be met to develop an e-KYC model?
4. Does the model actually employed in Jordan meet these requirements?
5. Is it comparable to models used elsewhere?
6. Can we state that the EKYC model used in Jordan also has beneficial effects for the government, the banks and the local population?

Chapter 2 Literature Review

In this chapter, we first investigate the financial aspects of financial inclusion systems: mobile banking, KYC regulations and the link between the two. We then look at the different systems of financial inclusion capable of being in line with KYC regulations used throughout the world and their advantages and disadvantages. This must allow us to make a list of criteria to which good systems must adhere, which will later be used to test whether the Jordanian system actually used is a good one. These criteria are both of financial and of technical nature. Moreover, we indicate which different parties are involved in the set-up of such a system.

While the number of scientific papers focusing directly to the topic of this thesis is limited, there are numerous articles, reports, and white papers from promoter groups, such as GSM Associations (GSMA) Mobile Money for the Unbanked support groups, research funded by Non-Governmental Organizations (NGOs), such as the World Bank, International Financial Corporation (IFC), Bill and Melinda Gates Foundation, and the Consultative Group to Assist the Poor (CGAP), which are supporting the improvement of the lives of the poor and financial inclusion.

2.1 Know Your Customer (KYC) and AML standards

Banks gather extensive data on clients as part of their Anti Money Laundry and Counter Terrorism Financing obligations. Know Your Customer or Customer Due Diligence is the process of gathering and verifying the client information by the regulated institution. Such processes are to make sure that the financial institutions are not on-boarding any unwanted clients by collecting proper information that enables the financial service providers to monitor a client's transactions for suspicious and unusual transactions (De Koker, 2012).

The basis of Know Your Customer guidelines can be traced since the international community's efforts to restrain money laundering and influx of illegal funds of drug trafficking in the late 1980's in U.S with "Follow the money strategy". In 1970, the government of the United States enacted regulation, The Bank Secrecy Act, 1970 that effectively called on U.S bankers to monitor their clients and to detect suspicious transactions by obtaining records and reports (Mulligan, 1998).

Efforts in U.S in 1980's to fight the threat of organized crime and restrain the use of drug trading money to enter the financial system (through the practice of money laundering) resulted in legislation and regulatory steps like Money Laundering Control Act, 1986. Furthermore, with the emergence of Financial Action Task Force (1989) and its 40 recommendations on Anti Money Laundering standards lead the way further ahead. In 1991, the directive issued by the European Union introduce similar anti money laundering standards under European Sphere. It Included inter alia norms for customer identification. (Nagpal, Kalra, & Mondan , 2015).

An association of thirteen global banks which aims to develop a frameworks and guidelines for the management of financial crime risks called Wolfsberg group. Such association is an example of the steps the banks undertook to save themselves from financial crimes and fraud indicate the seriousness of the issue which lead for a self-regulatory initiatives. The Woolfseberg group focuses mainly on Know Your Customer practices, Anti-Money Laundering and Counter Terrorist Policies. ("Wolfsberg AML Principles", 2017).

Another initiative after 9/11 on anti money laundry were raised to a tighter scope. Before 9/11, governments had attempted to implement client-profiles and "Know Your Customer" procedures. But this was interrupted by the lobby of banks and privacy lobbyists (Verhage, 2009).

Sultzer S (1995) discussed in his paper "Money Laundering: The scope of the problem and attempts to combat it" the use of non-bank financial institutions, payable through account and front companies as a dynamic way to avoid KYC rules and many money laundering regulations.

Mulligan D. (1998) discussed the implementation of "Know Your Customer" regulations and its impact on international banking system. The author suggested that there must be a consideration given to a framework that will permit countries to address the KYC issues in ways that their resources will permit; not by having they follow to blanket regulations.

Basel committee on banking supervision (2001) provided the benchmark KYC framework for supervisors to build national practices and for banks to create their own programs. This approach by Basel Committee was broader than a basic money laundering perspective, targeting on managing banking risks. It emphasized for designing core elements in a KYC compliance program. The committee suggested implementation of KYC guidelines in banks, non-banking financial sector and professional intermediaries like lawyers and accountants. In 2004, the

committee in the next report titled “consolidated KYC risk Management” provided that consolidated KYC risk management should be followed as a centralized process for coordinating and promulgating policies and procedures on a group wide basis. Banks must have robust information sharing between the head office and branches and subsidiaries.

Sreekumar & Sai (2013) noted that regulations relating to Know Your Customer (KYC) procedures satisfy very significant internal and external objectives for banks. Compliance with these requirement serves as an important control preventing money laundering, fraud and other operational risk events. Through a reference to a training session of a senior bankers on frauds, non-compliance with KYC requirement was discovered as the sole contributor to fraud and other operational risks in banks. Poonman & Arun (2014) attempted to study the use and acceptance of Aadhaar as a KYC document in India. The public perception of Aadhaar as a KYC tool is influenced by several factors defining its different dimensions and utilities. They discovered that the risk mitigated attribute and the uniqueness associated with Aadhaar have been found significant dimensions of its acceptance as a KYC tool. They also observed that the integration of technological aspects like the ability to capture biometrics as well as the facility of Electronic KYC (E-KYC) has found flavor with the people.

In general banks gather the following information about a client (Basel Committee on Banking Supervision, 2001; Financial Action Task Force, 2011):

- a) Name and any other name used;
- b) Permanent address;
- c) Contact particulars such as telephone numbers and an e-mail address;
- d) Date and place of birth;
- e) Nationality;
- f) Occupation, public position held and/or name employer;
- g) An official personal identification number or other unique identifier contained in an unexpired official document; and
- h) Signature.

In some countries, such as Indonesia, the religion of the client is also required in the normal account opening process (Bester et al, 2008). Financial institutions may require additional information if the client poses a higher money laundering or terrorist financing risk as done on Politically Exposed Persons (PEPs) case (Greenberg et al, 2010). These are persons who hold

prominent public functions, senior government, judicial or military officials, senior executives of state owned corporations, important political party officials (Gilligan, 2009). They might use their position for corruption. Therefore, financial institutions must exercise greater care when providing them their services. This is also true for their close associates and their family members. In practice, their names are screened against lists of known PEPs and other high risk customers to ensure appropriate risk management (Geary, 2010). In addition, clients should be screened on national and international sanction lists to make sure they do not appear on them, for instance lists of known terrorists linked to the Taliban or Al Qaeda or as persons who are implicated in the proliferation of weapons of mass destruction (De Koker, 2012).

2.2 ID and KYC barriers for refugees

According to an article published by the world bank titled ("Identification for Development (ID4D)", 2017) it was illustrated that without official identification, a person can struggle to access:

- Financial services, such as opening a bank account or obtaining capital and credit
- Social benefits, including food vouchers, pensions, or cash transfers
- Healthcare, such as health insurance, vaccinations, and maternal care
- Education, such as enrolling children in school or applying for scholarships
- Political and legal rights, such as voting, filing petitions in courts, owning property, or receiving an inheritance
- Gender equality, including prevention of early and child marriage
- Migration, including seeking asylum and crossing borders legally and safely

The provision of financial services is always linked to the personal identity of the user, this poses problems for refugees. Many studies reflect the refugee's conditions, but if one subject is found in all of them it is exactly the difficulties they face to obtain licit IDs. Some refugees have lost their ID or passport during their escape and they may not have easy access to registration or fear that official registration will increase their risk of detention or deportation (UNHCR & Social Performance task force, Public comment July 2016). In many countries, credit worthiness requirements (proof of income or a credit history for obtaining transactional bank accounts) further impede refugees' chances of gaining access to financial services.

In few countries, Financial Services Providers are legally disallowed from serving non-citizens or refugees. In other countries, regulated FSPs may automatically disqualify refugees if they lack identity and residence documentation, due to strict Know-Your-Customer (KYC) and Customer Due Diligence (CDD) requirements which were introduced with stricter Anti-Money Laundering and Counter Terrorism Financing (AML/CTF) regimes in many countries after 2001 (P. Chopra, P. Rajde, V. Gupta, P. Mishra and A. Pathak, 2016).

Billions of people around the world are indeed required to meet KYC standards to obtain services considerably important to their lives. Yet, widely prevalent archaic methods for KYC come in their way (P. Chopra, P. Rajde, V. Gupta, P. Mishra and A. Pathak, 2016). Reliance on paper-based documents as evidence to establish KYC has been the most important one. This is not only hugely expensive and time consuming; it is also one of the most significant barriers to effective financial inclusion in the developing world. The Central Bank of Jordan (CBJ) is seeking to leverage regulatory technologies (RegTech) approaches to enhance the effectiveness of its regulatory and supervisory arrangements and, ultimately, facilitate the adoption of innovative financial technology. Supporting the development of e-KYC could considerably enhance financial inclusion and make it easier particularly for the financially underserved.

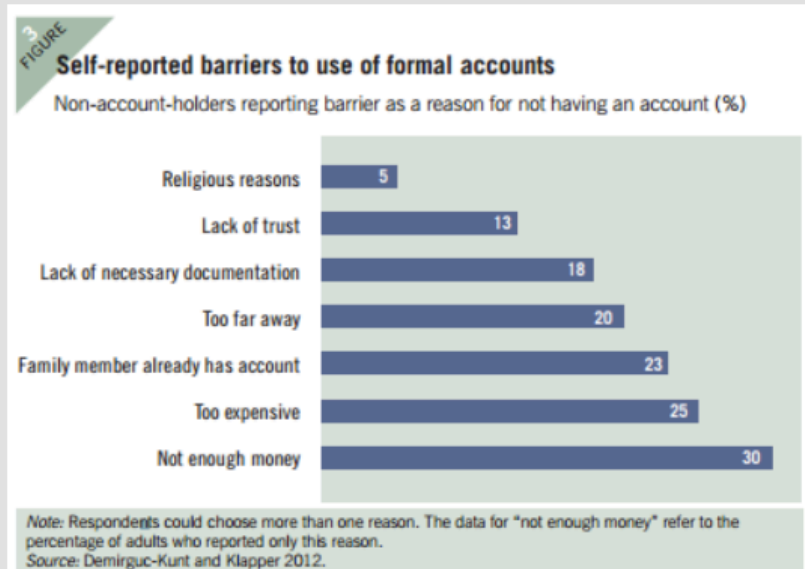
According to Nagpal, A., Kalra, J., & Mondan , M. (2015) in their paper titles “The journey from KYC to Aadhaar based E-KYC service: “The much needed change impetus for financial inclusion” they addressed the advantages of E-KYC as being paperless, consent based, non-reputable, instantaneous, regulatory friendly, eliminates document forgery, inclusive, low cost and machine readable.

According to CUTS International (2016) in their paper titles “Understanding and addressing competition & regulatory barriers to growth of payments banks in India” they discussed that sharing KYC information electronically will significantly reduce the cost of customer acquisition, and ensure completion of KYC process at lowest inconvenience to the customer and also lower costs to the licensees.

In addition, e-KYC would be an effective inclusive tool by building an up-to-date database which would also include refugees (J. Firpo, The World Bank, 2009).

Below figure illustrates the number of unbanked people worldwide and reported barriers:

for 375 million* not having an ID is a reason for not having a bank account



- **Lack of ID is Barrier:** 18% of Unbanked
- **Unbanked Estimate:** 2 Billion

***Source: Findex**

Figure 6: Unbanked people and reported barriers

2.3 Mobile Money systems and KYC regulations

2.3.1 Mobile Money systems

Financial services provided through digital mobility technologies have multiple configurations, goals, and characteristics. Depending on the combination of agents, technologies and objectives, they may have banking features, which are known as mobile banking. They may also have transaction payment features, which are recognized as mobile payments. Finally, they may also replicate the concept of money with digital features, which is then called mobile money.

However, the definitions of these concepts are not rigid and their delimitations are not very clear. In fact there is a considerable confusion with regard to the terms which are often used freely, regardless of their original meanings. This is the case with mobile payments: it may refer to bill payments, acquisition payments, or a transfer of financial resources or money between economic agents, and still come into the banking domain. In certain contexts, other concepts would be more appropriate, like mobile money, mobile transfer and/or mobile banking. (Jenkins et al, 2008; Laukkanen et al., 2008; Shen, 2011).

According to Diniz, Albuquerque and Cernev (2011) authors of the paper: “Mobile Money and Payment: a literature review based on academic and practitioner-oriented publications (2001-2011)” concluded the difference in definitions of mobile services related to finance in order minimize the confusion in terms resulted in the past years.

Concept	Definition
Mobile transactions	Mobile payments include payments made or enabled through digital mobility technologies, via handheld devices, with or without the use of mobile telecommunications networks. These payments are digital financial transactions, although not necessarily linked to financial institutions or banks. There are several models of mobile payments that are currently employed worldwide.
Mobile payments	Mobile payments include payments made or enabled through digital mobility technologies, via handheld devices, with or without the use of mobile telecommunications networks. These payments are digital financial transactions, although not necessarily linked to financial institutions or banks. There are several models of mobile payments that are currently employed worldwide.
Mobile banking	Mobile banking can be understood as a set of mobile banking services, involving the use of portable devices connected to telecommunications networks that provide users with access to mobile payments, transactions and other banking and financial services linked to customer accounts, with or without the direct participation of traditional banking institutions. This concept can also be regarded as the banking channel through which the digital mobile services are provided by the institutions to their clients, i.e. by integrating the concepts of service and channel.

Mobile money	Electronic money – being essentially digital – has attributes related to mobility and portability, and is equivalent to mobile-money or mobile-cash. It can be differentiated from other means of electronic payment (such as credit cards, debit cards, smart cards, etc.) because of its ability to replicate the essential attributes of traditional money, such as: liquidity, acceptability and anonymity. Mobile money may be related to mobile wallet, which refers to a digital repository of electronic money developed and implemented on mobile devices, allowing peer-to-peer transactions (P2P) between mobile devices (M2M) from users of the same service. It is similar to a normal physical wallet and is able to store money and credit and debit cards.
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Table 1: Definition of the main concepts employed around mobile financial services

Mobile money systems can be subdivided based on distance, service provider and technology. Based on distance, we can see that some of the services are relying on a one-to-one personal contact-based approach whereas others are independent of the location of the parties involved. Based on service provider, the players in the field range from Mobile Network Operators (MNO) to commercial banks and credit companies as well as to small application providers. And finally, based on technology, the services can be split into systems using Near-Field Communication (NFC) to mobile networks and to internet-based cryptography based systems (namely Bitcoins). (Jussila, 2015).

Mobile money applications have only been implemented since the beginning of the 21th century. However, during the last 8 years, the development of mobile money systems has been a leverage factor for the generation of new business ecosystems profitable to financial service providers and beneficial for customers and businesses who are using the service, especially in the developing countries.

While the number of scientific papers focusing directly to the topic of this thesis is limited, there are numerous articles, reports, and white papers from promoter groups, such as GSM Associations (GSMA) Mobile Money for the Unbanked support groups, research funded by Non-Governmental Organizations (NGOs), such as the World Bank, International Financial Corporation (IFC), Bill and Melinda Gates Foundation, and the Consultative Group to Assist the Poor (CGAP), which are supporting the improvement of the lives of the poor and financial inclusion.

This literature review encompasses in its second part (2.2.) different case studies and reports regarding the current models of digital identity used to facilitate financial inclusion around the world and addressing the regulatory, legal and privacy barriers in addition it highlights the different services that can be enabled through the digital identity in addition to financial services.

2.1.3 Mobile money systems and KYC/AML

According to Maurer (2011) due diligence for client identity requirements Know Your Customer (KYC) and Customer Due Diligence (CDD) processes are not just important for financial system integrity, anti-money laundering (AML), or countering terrorism financing (CTF). They are also considered important as the lack of identity documents is often one of the most powerful barriers to financial inclusion.

As already indicated in Figure 4, most authors reviewed the reasons of why people are not able to use financial services. There are still people who do not have not a governmental ID (BIS, 2014), but also not being able to understand financial services (Lusardi and Mitchell, 2015) and not trusting financial entities or religious reasons (World Bank, 2017).

While mobile money systems are viewed as a tool that advances financial inclusion, they are also considered to stop money laundering and terror financing risks (FATF, 2010). According to and Chatain et al, (2011); The main risks identified by the World Bank are anonymity, elusiveness, rapidity and poor oversight where anonymity and elusiveness are linked to not face-to-face operated account opening processes, next to the lack of public resources of information that should verify the identity of the customers in many developing countries.

Other studies conducted by the Consultative Group to Assist the Poor (CGAP) in 2009, concluded that “AML/CFT measures can negatively affect access to, and use of, financial services if AML/CFT standards measures are not carefully designed.” (FATF, 2011) .

In contrast, the Financial Action Task Force (FATF) provided space for the development and innovation of mobile money systems when it introduced a risk-based approach to certain elements of the AML/CTF regulation and compliance standards. This approach was not

mandatory when it was first acknowledged in 2003 but specific aspects have become mandatory after the recommendations were revised in 2012 (De Koker, 2014).

One of the main points is the Risk Based Approach (RBA) risk assessment. Under Recommendation 1 countries are expected to “identify, assess and understand” their money laundering and terrorist financing risks.” Such assessment will then highlight appropriate regulatory and other risk mitigation measures. Countries should also require their AML/CTF regulated institutions to undertake risk assessments to mitigate their institutional Money laundry and Terrorism Financing risks. These institutional assessments determine the extent of the Customer Due Deligince measure that are adopted (De Koker, 2012).

The FATF’s risk based-approach allows countries to exclude activity from AML/CTF regulation where the activity is limited and pose a low level of ML/TF risk, therefore, regulators could allow, and institutions may consider employing, simplified due diligence measures. According to Interview with Maha Bahou from Central Bank of Jordan (“Our strategy is national, not institutional”, 2017) “CBJ is considered a pioneer in the inter-agencies collaboration, especially in drafting rules and regulations to simplify KYC requirements for vulnerable people”.

Several mobile money models were developed with appropriate policies and procedures to justify simplified due diligence measures (Solin & Zerzan, 2010). On the other hand, simplified due diligence measures may decrease the ability for an effective account monitoring (De Koker, 2011) and, as a result, may lead to less reports of valid criminal activity and more disclosure of information of innocent clients to the authorities. This is of particular concern given the ability of mobile money to generate client data and the fact that this data is often held by more than one party in the mobile money provider chain (De Koker, 2012).

2.2. Existing EKYC and Digital ID systems around the world

In this section, we will present the some of the models applied around the world as tools help financial inclusion and other systems which allows and accelerate financial inclusion. The example of using e-KYC in India, the m-ID in Estonia and electronic ID in Finland:

The Use of eID in Estonia

<p>What is the Project?</p>	<p>Estonia’s Mobile eID Solution (m-ID) was among the 1st of its kind and has been heralded as a model case internationally. The Government of Estonia has been offering services electronically through its eGovernance agenda since the early 2000s. Initially, the private sector was involved only in manufacturing smartcards, and online authentication was based on a PKI-enabled smartcard and a physical card reader with a USB hub. In 2007, a mobile operator began offering mobile authentication to facilitate e-banking transactions and other private-sector service exchanges. In 2011, the Government of Estonia reached an agreement with mobile operators to integrate this form of authentication into e-government services as well. Today, mobile ID can be used on most wireless devices for the entire range of government services, from tax returns to public transportation and voting in national elections.</p>
<p>Who is involved?</p>	<p>The primary government body involved with m-ID is the Estonian Certification Authority, Sertifitseerimiskeskus, which manages the population registry. Other government agencies are responsible for the content and execution of electronic services. Private-sector partners include mobile operators EMT, Elisa, and Tele2.</p>
<p>How does it work?</p>	<p>Users wishing to participate in the mobile ID scheme need to request special PKI-enabled SIM cards from their mobile operator. The user’s identity is verified and a private key stored on the SIM card facilitates digital authentication through the mobile operator and a trusted service provider. These SIM cards are issued by the certification authority, but sold to customers by the respective operators as part of their existing mobile phone contract. To access an electronic service offered by the government through a mobile phone or a tablet, mobile ID offers secure digital two-factor identification without requiring additional hardware or documentation, such as a card reader.</p>
<p>Who collects and stores data?</p>	<p>End user data is stored in the country's population registry, against which mobile operators will check their customer data in order to provide the authentication service. The mobile operator has no direct access to the registry or other citizen data; it merely sends a request to the government server and receives a positive or negative response.</p>

Electronic ID in Finland

<p>What is the project?</p>	<p>In Finland, multiple forms of electronic ID have existed since 2001. The banking sector had been demanding two-factor authentication involving a unique ID number, a PIN code, and a one-time password since the late 1980s. In terms of government-issued ID, Finland was the first country to roll out a national eID card in 1999. In 2008, in response to challenges of impracticality and underuse the existing systems were facing, a consortium of government agencies, mobile operators, and the Finnish Federation for Communications and Teleinformatics (FiCom) agreed to launch a mobile identification system that would combine the benefits of the existing systems and be more accessible to the public.</p>
<p>Who is involved?</p>	<p>A number of public service and government agencies were involved in designing the terms for the mobile ID scheme, while the Finnish Population Register Centre (VRK) continues to be involved as the ultimate holder of population data. The system in itself was designed by three major mobile operators—DNA, Elisa, and TeliaSonera—and the PKI infrastructure had already been developed by the time that the mobile ID project was launched.</p>
<p>How does it work?</p>	<p>The system is a two-way authentication system based on PKI SIM-cards and the operators' user database. When wishing to access an electronic service through a mobile phone, the user's phone number acts as a trigger for the mobile ID transaction – the user will only have to provide a PIN code to verify the correct use of his mobile device. User IDs are pre-identified, and a private key stored on the specialized SIM card facilitates the digital authentication through the mobile operator and a trusted service provider. What is distinctive about the Finnish mobile ID system is its inter-operability among mobile operators. Despite each provider operating its own mobile ID application, a so-called “circle of trust” agreement ensures that users will be able to access services through the application of a mobile operator other than their own.</p>
<p>Who collects and stores data?</p>	<p>The VRK is the state Certificate Authority in the country. Prior to a change in legislation in 2009, it was the only entity able to issue unique identifiers to individuals. The authority still holds centralized population data for the country, which forms the basis for the national ID, but mobile operators are now able to issue Finnish unique identifiers to customers directly at the store, which will later be transmitted to the VRK database.</p>

e-KYC in India

<p>what is the project?</p>	<p>In 2009, the Indian government embarked on an ambitious project to enroll its 1.2 billion people in a digital identity system that would provide each person with a unique identity number (Aadhaar) to serve as a foundation for proof of identity and public service delivery. The Unique Identification Authority of India (UIDAI) was created to design and manage this process. Rather than hiring thousands of staff and creating public-sector infrastructure to undertake this enrollment itself, UIDAI decided to rely on third parties to collect resident’s data with the goal of increasing efficiency and value for money. To date, over 1 billion people have been registered (around two- thirds of these by private firms), and Aadhaar numbers have been linked to the delivery of Liquefied Petroleum Gas (LPG) subsidies, Public Distribution System rations, and other social protection programs. In the future, the goal is to connect Aadhaar to myriad other public and private services through a variety of partnerships.</p>
<p>Who is involved?</p>	<p>The UIDAI is the main authority in charge of the Aadhaar program, while the “Registrars”— including state governments, public service agencies, banks, telecom companies, insurance agencies, etc.—sub- contract a variety of local agents to complete the registration process. Any public or private entity can then use the Aadhaar number to authenticate a user against the UIDAI database. The Standardization Testing and Quality Certification (STQC) Directorate is charged with ensuring that the technology meets UIDAI standards.</p>
<p>How does it work?</p>	<p>UIDAI signs Memoranda of Understanding (MOUs) with Registrars in each state, and these Registrars may then contract with public entities or private companies to carry out the actual enrollment of residents according to UIDAI’s strict technical specifications and regulations. The data captured by enrolling agencies—including biographical information such as name, gender, date of birth, and address, along with 10 fingerprints, two iris scans and a photo—are then securely sent to UIDAI for verification and de-duplication. Once the digital identity is verified, a unique identification number (the Aadhaar number) is issued to the enrollee, who receives a printed letter with the number in the mail. Public and private service providers can then authenticate identity online using the Aadhaar number and a fingerprint (e.g., via a point-of-sale or POS device). Vodafone, for example, has partnered with the Indian Telecom Authority to begin Aadhaar-based e-KYC verification of new customers in Kolkata.</p>

Who collects and stores data?	The enrolling agents collect the data, which is then encrypted and sent to UIDAI for validation against its central database. When Aadhaar is used for authentication, service providers simply send a request to UIDAI for verification of an identity (“is this person who she claims to be?”) and receive a yes/no response in return---data remain with UIDAI and are not shared or accessible by other public or private entities.
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Other uses for electronic identity has been noticed in countries like Nigeria and Pakistan for example the State Bank of Pakistan has recently embraced the use of biometrically verified SIM cards as part of a larger move toward biometric verification for mobile wallet registration. The July 2016 revisions to Pakistan’s Branchless Banking Regulations allow the lowest level mobile wallet accounts to be opened remotely (i.e., not at a branch or through an agent) utilizing such SIM cards. (Rashid & Staschen, 2016)

Another example is found in Nigeria where the Central Bank along with the Bankers Committee of senior bankers introduced an initiative to implement their own solution—the issuance of a unique Bank Verification Number (BVN) for all banking clients linked to biometric details of all clients. (Porteous & Bansal, 2016).

In the United Kingdom, the Digital Government Services has in 2016 launched an online service called GOV.UKVerify Which certifies service providers that meet defined standards for providing digital identity for citizens. (Porteous & Bansal, 2016).

In the US, the public-private Identity Ecosystem Steering Group (IDESG) evolved from the US Government’s 2011 National Strategy for Trusted identities in Cyberspace (NSTIC) and has recently published Baseline Functional Requirements and a listing and certification scheme for trust frameworks in the identity ecosystem. On the international level, the World Bank’s recent ID4D initiative seeks to support national identification efforts and to promote more systemic understanding and classification. (Porteous & Bansal, 2016).

On the other hand and according to CUTS International (2016) in their paper titled “Understanding and addressing competition & regulatory barriers to growth of payments banks in India” they discussed that with the advent of CKYCR, the cost of saving KYC data is expected to reduce from Rs. 150-200 to Re. 1 per upload, download. Furthermore, in the same paper they discussed that “sharing/transfer of customer-related information between different

service providers could be expensive. The customer will have to eventually bear such costs.” The cost can be reduced if a central KYC repository is established for all KYC-related documents. A central KYC registry has been proposed to ensure uniformity in KYC standards across the financial sector, and storage of such records at single place.

Chapter 3 METHODOLOGY

Research strategies can be divided into quantitative and qualitative methods. The quantitative research method emphasizes quantification in the collection and analysis of data. In addition, it has a deductive approach to the relationship between theory and research, which means that it aims to develop a theory and hypothesis and finally test the created hypothesis. In contrast, qualitative research method emphasizes words instead of quantification in the collection of analysis of data. On the other hand, it emphasizes an inductive approach to the relationship between theory and research. The inductive approach aims to collect data and develop a theory as a result of the data analysis. Qualitative research is concerned with the generation of theories rather than testing them. (Bryman and Bell 2011; Saunders et al. 2000)

According to Saunders et al. (2000) studies can be divided into three groups:

- Exploratory studies: Helps to seek new insights, to ask questions and to assess phenomena in a new light. In exploratory studies there are three ways of conducting research: a search of the literature, talking to experts and conducting focus group interviews.
- Descriptive studies: Provides a proper profile of persons, events or situations; it is often an extension of exploratory research.
- Explanatory studies: The object is to study a situation or a problem in order to be able to explain causal relationships between variables.

The goal of this master's thesis is to understand, explain, determine, examine and interpret a new phenomenon (e-KYC as a facilitator for financial inclusion through mobile money services) and study its challenges and benefits). In addition, this thesis aims to answer the questions how it can be applied. These aims mean that the qualitative research method with the inductive research approach is suitable in this case, because we are not testing some existing theories, but instead we are creating an overview of the phenomena that has not been researched yet. Saunders et al. (2000) says when there is a lack of relevant data, the qualitative interview research method should be chosen. By doing this, it is possible to get extensive information on

the research questions and to deepen the understanding of the subject of the study, in this case the challenges and benefits of applying a new model to the existing ecosystem (e-KYC as a facilitator for financial inclusion through mobile money services). This thesis combines both the use of the literature approach and the data sourced from interviews, which means that this is an exploratory qualitative study.

3.1 Structure of Interview

Saunders et al. (2000) defined interviews to be a discussion between two or more people. Qu and Dumay (2011) point out that the research interview is one of the most important qualitative data collection methods. Saunders et al. (2000) say that by doing interviews it is possible to get valid and reliable data that is relevant to the research questions and objectives.

Saunders et al. (2000) say that interviews can be categorized into three groups as follows: structured interviews, semi-structured interviews and unstructured interviews. Examples of structured interviews are different types of questionnaires based on standardized or identical sets of questions and are used in quantitative analysis. Semi-structured and unstructured interviews include a set of questions that are non-standardized. In semi-structured interviews the researcher only has a list of themes and questions that have to be covered, but these may differ from interview to interview. In practice, this means that it is possible to omit some questions in particular interviews, but in some cases it may be necessary to pose some additional questions within particular organizations. Unstructured interviews are informal and they can be used to explore in depth a general area, which means that there are not a predetermined list of questions. Instead, an interviewee has the possibility to freely talk about events, behavior and beliefs in relation to the title (Saunders et al. 2000).

According to Vinten (1995), semi-structured questions enable interviewees to provide more valid responses in terms of unearthing genuine attitudes and views than structured interviews. That is because open format and semi-structured questions allow interviewees to reply in their own words (Vinten, 1995). Qu and Dumay (2011) point out that semi-structured interviews are flexible, accessible and intelligible. First and foremost, they can disclose important and hidden facets of human and organizational behavior. All in all, semi-structured interviews are the most effective and convenient way of gathering information (Qu and Dumay 2011).

The interview questions here consist of semi-structured questions. The semi-structured questions fit best because there is a lack of existing data, and thus a structured interview would have been too confining for the purposes of this thesis. So as Qu and Dumay (2011) said, semi-structured questions enable one to obtain valid, valuable data which is needed to answer the research questions and make valid conclusions. Also semi-structured questions allow interviewees to emphasize important aspects from their own point of view, which is needed when researching a totally new field.

The semi-structured interview is available in English in Appendix 1 and in Finnish in Appendix 2. Interview questions are divided under four main categories that are derived from the theory portion of this thesis. These categories are innovation, technology & digitalization, ecosystem and the general portion:

- Financial Inclusion: The objective of the Financial Inclusion portion is to find out what are the existing Financial Inclusion models in Jordan, how innovation in the financial sector is helping in providing financial services to the unbanked, and what are the barriers to it.
- • Technology & digitalization: In this portion, the aim is to find out, how technology development together with digitalization have effect in regard to Financial Inclusion. Moreover, the objective is to determine challenges, risks, possibilities, and benefits concerning innovations and new technologies.
- • Ecosystem: The objective of the ecosystem portion is to find out how the business ecosystem of the financial service is changed in terms of new market entrants, relationships, and the roles of ecosystem players. Also, the goal is to determine what the main change factors are according to interviewees.
- • In general: In this portion, interviewees have the possibility to say whatever they want regarding the business ecosystem change of the financial industry.

In practice, the interview structure was not strictly followed. Instead, some questions were left out, some questions were added in and some were slightly modified depending on each situation and interviewee. That's because the ecosystem of the financial services is vast and thus it includes actors that differ from each other. For instance, new FinTech such as Mobile Money Service Providers firms differ from the traditional financial companies such as banks.

Moreover, it is a self-evident truth that regulators have a totally different approach to the themes than companies. Of course, interviewees varied in nature and that's another reason why some questions had to be followed up with some secondary questions, or some questions had to be phrased in a different manner in order to get more coherent results. But all interviews achieved the characteristics of the half-structured questions presented earlier.

3.2 Data Collecting

The empirical portion of this thesis contains 4 semi-structured interviews. All information about the interviewees, including business field, interview date and the position of interviewee are shown in Table 2. The crucial factors that affected the selection of the interviewees were the business field of the target organization and their potential contribution to this master's thesis. The objective was to widely cover the whole business ecosystem of the financial industry. As seen in Table 2, interviewees consist of three different categories according the data triangulation theories, thus the use of several different data sources. Denzin (2006) says that the data triangulation involves time, space, and persons and it enhances the credibility and validity of the research findings. That is the reason we chose to widely interview organizations with different backgrounds. These four different parties are the Central Bank of Jordan, a bank, a mobile money service provider and a payment solution provider.

Four of the interviews were conducted in person, face-to-face. Resulting 31 pages of transcribed speech. All meaningless filler words were left out. The interviews were given in Arabic and English and the interviews were conducted on between July and August 2017 as seen in Table 1. From each interviewed company there was only one interviewee, most of which were the heads of the whole companies or managers of some department (See Table 2). In each case, a half hour was reserved for each interview, but in many cases it took nearly an hour because of the overall conversation. All companies will be kept anonymous for the thesis except for the Central Bank and that is the reason why companies' names or further identification details are not offered in Table 2.

Table 1. Interviewees

Interviewees	Business Field	Interview Date	The Position of the Interviewee
Interview A	Central Bank of Jordan	27.07.2017	Head of Financial Division and Financial Inclusion Department
Interview B	Bank	02.08.2017	Head of Digital Banking
Interview C	Payment Solution Provider	14.08.2017	Business consultant
Interview D	Mobile Money Service Provider	16.08.2017	Payments Solution Manager

Table 2

The main objective of this interview research was to collect data for the research questions and for the creation of a comprehensive research model. As mentioned in the before, the main problem is that there is no previous data available regarding the subject of this thesis – E-KYC as a Facilitator for Financial Inclusion the Mobile Money Services. The Case of Refugees in Jordan. By conducting interviews, the aim was to collect valuable firsthand knowledge about the importance of financial inclusion to refugee’s society and how it can be accelerated through digital identity or electronic know your customer technology.

3.3 Data Analysis

Saunders et al. (2000) say that one approach to analyzing qualitative data is to thoroughly read and re-read transcripts of qualitative interviews. This method may cause some problems, and so to avoid them Saunders et al. (2000) recommend to follow the next steps in order to successfully read and analyze qualitative data. These are the following steps:

- **Categorization:** In the first step, the collected data has to be classified into categories. Categories provide a structure which help the researcher to analyze data further (Saunders et al. 2000). In this thesis the questionnaire is already divided under four themes (see section 3.1) that are derived from the theory portion. These themes will be exploited as categories when analyzing collected data.
- **“Unitizing” data:** In the second step, the objective is to reduce and rearrange the data. This is exploited by attaching relevant pieces of data under the categories that are devised in previous step (Saunders et al. 2000).
- **Recognizing relationships and developing categories:** In the third step, the aim is to find out key themes and patterns or relationships in the re- arranged data. The ultimate goal is to determine the meaning of the data set (Saunders et al. 2000).

4 Research Findings

This chapter of the study introduces the findings of the qualitative semi-structured research interviews. The order of this chapter follows the structure of the interviews (see the section 3.1): the first section is a case analysis for the interviews, the second section is about financial inclusion in general and the case of refugees, the third section deals with technology change and digitalization of identity and its challenges and barriers, and the fourth section covers business ecosystem. In the final section, the findings are tied up together with the theory framework of this study.

4.1 Interviews analysis

Central bank Interview		
Financial Inclusion	Importance Of financial Inclusion	<p><i>“Yes, Financial Inclusion is important, to demonstrate this, the central bank of Jordan has changed his mandate, his mission and his vision to include enhancing financial inclusion, under enhancing financial inclusion and financial stability in the kingdom.”</i></p> <p><i>“we are planning to increase financial inclusion from 24.6% to 36.4% and reduce the gender gap as well.”</i></p> <p><i>“we believe integrating them in to a society will be a win situation, because they come with different skills, different education background and will enthuse or will stem our labor force as well, so we believe integrating them will have productive and more sustainable economy for the wellbeing for both, both sides hosting communities and refugees plus integrating them will enhance, their opportunities of life.”</i></p>
	Challenges In general, and for Refugees In specific	<p><i>“We think the first barrier was having an ID (identification) they were not allowed to presume or to lead any work or to have any jobs here because of lack of id however we released this and we amended our instructions t allow refugees to use their UNHCR card which is provided by both the UNHCR and the ministry of interior affair which is called tiered KYC we simplified KYC for refugees.”</i></p>

Central bank Interview		
Digital Identity	Importance	<p><i>“Well! Digital identity is vital, it is a success factor for all our initiatives its really important and that’s what we lack, we know that they don’t have this digital identity which we are now as you might know launched our credit beurue here in Jordan and we are thinking to alternate credit scoring for them to include many other information refugees can provide in terms of education background so we can develop this data base.”</i></p> <p><i>“For digital identity, we already connected Jordan mobile payment switch with the national id platform as a first stage to explore projects into EKYC and we have met with leaders in the market with this regard and we are putting strategy and a plan to digitize this process.”</i></p> <p><i>“I think it is necessary because our financial inclusion perspective or theme is we go to people the unbanked so they don’t come to us. So having digital id will enhance their access to the finance will give them the tool to access to SMEs and if they have innovations to think how to fund them and will defiantly will increase their financial inclusion especially among youth.”</i></p>
	Challenges	<p><i>“Always culture challenge, we have faced this before and we still facing such challenges, given different stakeholders as well with different perspectives, we know that national security is another thing to consider so taking this into consideration will be challenging situation.”</i></p> <p><i>“I think its more technical risk, which we are putting in place here at central bank and along with our partner the ministry of telecommunication to ensure best networks security in this regard.”</i></p> <p><i>“We think the first barrier was having an ID (identification) they were not allowed to presume or to lead any work or to have any jobs here because of lack of id however we released this and we amended our instructions t allow refugees to use their UNHCR card which is provided by both the UNHCR and the ministry of interior affair which is called tiered KYC we simplified KYC for refugees.”</i></p>

Bank (Interview B)		
Financial Inclusion	Importance	<p><i>“It is a very good question in a way that the bank is heavily driven by corporate sector, so most of the money, the huge banks operating almost 30 countries, and if you look at the banks current position, the focus in the corporate banking, in lately last years focusing into retail, a little bit SME, wealth management, now banking globally is changing, and we need to look about different ecosystems, and we have already been looking some ecosystems, where for example non-bank customers could be part of it, but right at the moment, it’s not the priority, its more about looking; are we losing an opportunity? And if there is an opportunity, what kind of role our bank as a bank can play on that? Or Can we part of the ecosystem not as an our bank but contributing that as a financial institution and playing some other role on that but currently there is no conclusion to not be part of it or to be part of it.”</i></p> <p><i>“Especially in Jordan, about 75 percent of the population, it could be pretty foolish not to think about what is the opportunity, but the bigger question of that, what is the banks role on that VS being part of the ecosystem, so for example, the bank is looking at Fintechs and how we invite Fintech to rock with the bank, and that could lead to the position where we as a bank we are not actually participating or focusing on attracting unbanked people, but however, it doesn’t mean that we are not part of the ecosystem, where we are providing API’s and enabling Fintechs to kind of access that to market.”</i></p>
	Challenges In general, and for Refugees In specific	<p><i>“when we talk about some other experiences I have when we started the digital only banks, the risk position where the bank was like; are we able to just go and try something new, and step into the new market, and do some quick move, and attract different kind of customer, bigger banks has the kind of responsibility of the history, and the name...and if something goes wrong, its actually the Bank name and brand which is gonna get the hit.”</i></p> <p><i>“I think that there ecosystem is changing heavily and is not only about refugees, it is about who is taking care of payments”</i></p> <p><i>“there is different parts are coming together in the ecosystem and the bank will have a role to play, the bank could be doing some funding but who is building the front and who is managing the customer relationship, who is dealing with the different parties that’s is still unknown.”</i></p>

Bank (Interview B)		
Digital Identity	Importance	<p><i>“but there is no question that in 2020 in all different circumstances we need to do that based biometric behavior, the data and the digital era of that, and it is definitely gonna benefit the customer finally”</i></p> <p><i>“and I think that the key factor what we are focusing on is to remove the “human errors which is definitely happens there”</i></p> <p><i>“I think you have the key points, definitely easing the E signature and EKYC, enables us to provide the services, the key is to be able to provide to the customers, the relevant services when they actually need them”</i></p> <p><i>“we need to understand if the customer would be benefiting for different type of product, could be saving products, could be credit product, and that has to be offered on the right time for the relevant customer”</i></p> <p><i>“From the our bank digital point of view, we would do everything we can to do it as quickly as possible and do it in the right manner”</i></p>

	Challenges	<p><i>“to come up with the rules that where everybody can comply is slightly difficult”</i></p> <p><i>“I think this is mainly driven by the DNA and experience level in the wider industry so API economy is now partly introduced and existing lets say in Europe, which means that we have had various parties and now lately including banks and when I say lately we are talking about some years, who has been working on APIs, studying APIs, learning from APIs, today in Jordan market, we have very limited skills and capabilities around integrating, opening APIs, defining the standards, so the risk what I’m stating here is the experience level in the regional parties, could be suppliers, IT providers, developers, and specialist in this system”</i></p> <p><i>“We are planning and working on cloud, so one of the challenges let’s say, if you look about UK environment, they would have tens if not thousands of cloud suppliers, where you can say that my data center is still in London and I can call to order it when I want. Now we don’t have mainly low cards data centers holsters, and the cloud providers, which means that the IT infrastructure, if you want to do something on cloud, means that, cloud services, will be outside, of Jordan, could be outside the middle east, and then we start to open this conversation, that look what can happen in cloud? what’s need to stable? and what data needs to stay in country, and that’s a huge topic itself, like if something is stored, if some, if some data is stored, if some data is manipulated? What is standard data? If not customer data, what can go here and there. These are the I infrastructure challenges, and a big help would be, if there would be, a local supplier for example for cloud services!”</i></p> <p><i>“Its not about the system, and the technology, it’s how we use it, and then when we use it incorrectly that can create different of privacy issues.”</i></p> <p><i>“when we talk about IT technology and data, the thing that to Keep in mind that when something goes wrong, the impact can be like a catastrophically huge”</i></p>
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Payments solution provider (Interview C)		
Financial Inclusion	Importance	<i>“We are offering the mobile payments like the Jomopay: in the central bank of Jordan, which will directly influence and contribute, and contribute in increasing number of users for the mobile payments applications, which will 100% contribute in increasing the number of bank accounts and this will reflect directly on the financial inclusion, which is the main goal.”</i>
	Challenges In general, and for Refugees In specific	N/A

Payments solution provider (Interview C)		
Digital Identity	Importance	<i>“Well, digital identity is an electronic copy of KYC, in a miniature. The objective is to facilitate and make it easy for the non-residents users and people who lives in remote areas, and places who does not have a bank account, and they don’t need a lot of paper documentation and work, to define and confirm their identity. So, accepting this, will help people to use and adopt the financial services, so that this digital identity will be enough to identify somebody”</i>
	Challenges	<i>“So, we don’t have to go to the wide KYC, but the choosing the minimal KYC, which is quite enough, where we collect all the information, which is considered to cover the requirements, and well enough, to do a due diligence on the potential users.”</i> <i>“In my opinion it is the legal framework, to support this system, there should be laws, and legislations, that is supported by the central bank, If there will be legislations by the central bank, the digital identity will be applicable and this system will be considered and can go further in the process. So, the legislations and laws are very important to support and facilitate the idea of the digital identity, and its implementation, so it would be legal.”</i> <i>“There has to be a strong network, where this is very important, a secured network, with high technological features, and most importantly a secured system, as we are dealing with financial data and in a financial sector, and security here is the key here.”</i>

Mobile money service provider (Interview D)		
Financial Inclusion	Importance	<p><i>“What we have today as an opportunity with the refugees, is simply the service which is via the “Sondouq Al Mara’a) where they have the refugees as one of their segments, that they are actually taking loans from them. So, for these we are turning to the same approach, for their customer base.”</i></p> <p><i>“Of course, and statistically, the refugees and let’s say the not-Jordanians nationalities, do represent almost a 30% of the market, which is a considerable percentage, and especially the refugees, as they do not have access to the financial services here in Jordan, so of course they are a targeted segment for us. Today we are mainly working with our customer base, and step by step we will be dragging the refugees.”</i></p>
	Challenges In general, and for Refugees In specific	<p><i>“But one of the main factors regarding the refugees, is the International Remittances for the cross-boarder remittances, which is not available now in the central bank, and once this door is open, of course there will be a huge potential for us to acquire, as there will be a very valid reason for us!”</i></p>
Mobile Money Service Provider		
Digital Identity	Importance	<p><i>“I think that the digital ID, can solve the KYC, as we just said, that it really facilitate and accelerate the process.”</i></p> <p><i>“I think that an electronic KYC system would be a solution to facilitate the onboarding of refugees in the financial system”</i></p> <p><i>“Again, you are accelerating the process, as sometimes the refugees, and especially after everything they went through, and they have experienced, they might have a sensitivity concerning dealing with someone, in addition to that, when it comes to a financial service, where anyone would like to have privacy in the financial transactions, so an (e KYC) system will actually help to remove all of these barriers.”</i></p>
	Challenges	<p><i>“The biggest challenge is the mindset of the people.” As you are switching unbanked people to a new system.” the education of these people is not helping them to trust these new systems, as its sometimes concerned with their religion, culture.”</i></p> <p><i>“The human factor error, of course, as sometimes people will not comprehend, and understand the or the right picture, as the language for example, there is a small percent of people they can’t read well, where they are not well educated, and they wish for such a service, and then the challenge is higher.”</i></p> <p><i>the challenge will occur in the translation of the regulations and laws that governs the process into an IT solutions and systems.”</i></p>

4.2 Financial Inclusion

According to Central Bank Interview; financial inclusion became a high priority “to demonstrate this, the Central Bank of Jordan has changed his mandate, his mission and his vision to include enhancing financial inclusion, under enhancing financial inclusion and financial stability in the Kingdom” (Interview A, 2017). In addition, the interviewee pointed that central bank of Jordan joined a universal international coalition for financial inclusion and made bold commitment to achieve in this regard. Furthermore, Central bank has plan to increase financial inclusion rate, “Beside the national strategy which is being prepared from 2018 to 2020 we are planning to increase financial inclusion from 24.6% to 36.4% and reduce the gender gap as well”. (Interview A, 2017).

Regarding who is leading financial inclusion in Jordan: “The Central Bank is the leading financial inclusion in the country, being the chair of financial inclusion steering committee, preparing the financial strategy, and then afterwards heading the monitoring and evaluation of the process. So, it is under the Central bank, yes.” (Interview A, 2017). The Central Bank has plans to increase usage on digital financial services between youth by 20,000 users a year, “we are approaching this through a couple of projects first one is called cashless universities where we are targeting universities providing them with these services and at point of sale within campus so they can use them.”. Enhancing Jordan’s financial inclusion status require a lot of effort, “we must provide or design consumer education to literacy problems, we already have a program a national wide program for education and literacy We have included a full chapter about the financial issues in the school curriculum, and now we are targeting universities to provide them with such prerequisites mandatory classes to take financial education and now we are targeting civil organizations, non-government organizations and the whole Jordanian population, through fairs and educational campaigns and through on line and offline methods.” (Interview A, 2017).

According to payment system provider, the interviewee pointed that they have a big role in the financial inclusion process since they offer the mobile payment SWICH system in the central bank of Jordan where all mobile payment systems clear the payments “which will directly influence and contribute in increasing number of users for the mobile payments applications,

and that will 100% contribute in increasing the number of bank accounts, and this will reflect directly on the financial inclusion, which is the main goal.” (Interviewee C, 2017).

On the other hand, bank interviewee argued that just before five years banks started to focus into retail *“the bank is heavily driven by corporate sector, and if you look at the banks current position, the focus in the corporate banking, in lately last years banks started focusing into retail, a little bit SME, wealth management, now banking globally is changing, and we need to look about different ecosystems”* (Interview B, 2017), however, the bank interviewee mentioned that right at the moment, financial inclusion is not the priority, *“its more about looking; are we losing an opportunity? And if there is an opportunity, what kind of role our Bank as a bank can play on that? Or can we part of the ecosystem not as a Bank but contributing to that as a financial institution and playing some other role on that but currently there is no conclusion to not be part of it or to be part of it.”* (Interview B, 2017).

But the bank has different perspective about their role in financial inclusion, which is an indirect role, according to the bank interviewee: *“Especially in Jordan, about 75 percent of the population, it could be pretty foolish not to think about what is the opportunity, but the bigger question of that, what is the banks role on that VS being part of the ecosystem, so for example, the bank is looking at FinTechs and how we invite Fintech to rock with the bank, and that could lead to the position where we as a bank we are not actually participating or focusing on attracting unbanked people, but however, it doesn’t mean that we are not part of the ecosystem, where we are providing API’s and enabling FinTechs to kind of access that to market.”* (Interview B, 2017).

Refugees as a potential customer in the financial industry seems to be viewed differently within the financial ecosystem, refugees has special attention within the central bank point of view *“Jordan was the first country to declare an official international commitment, into providing them access to financial services and this is mandated in our MAYA and national financial inclusion strategy”* (Interview A, 2017), furthermore, interviewee from the central bank highlighted that the central bank viewed refugees as human resources, and integrating them into society will be a win-win situation since they come with different skills, different education background and the integration will stem the country’s labor force, *“so we believe integrating them will have Productive and more sustainable economy for the wellbeing for both, both sides hosting communities and refugees, plus integrating them will enhance their opportunities of life*

and will provide us with different means, with evidence base information for policy formations.” (Interview A, 2017).

In turn, the case of the bank is different, the long history of the bank makes it difficult to just go and try something new by stepping into a new market to make some quick moves, and attract different kind of customer groups, *“bigger banks including the our Bank has the kind of responsibility of the history, and the name, so if you have built a 75 years of history, and we would enter to some new kind of ecosystem, and start to attract new kind of customers groups, its actually our Bank’s name, and if something goes wrong, its actually the Bank name and brand which is going to get the hit.”* (Interview B, 2017). Also Bank Interviewee argued that in the last 3 or 4 years, banks for example has established digital only initiatives sub branches with a separate brand to acquire new types of markets. Another ways the bank can help in the financial inclusion process is through integration with the ecosystem *“we can talk about API and some other technical elements or being in any other way part of the ecosystem, but I find it unlikely it’s a wider question the bank with its name decide the actually that our new direction to kind of go toward new type of businesses and new type of customer group , being funding something or inviting Fintechs globally and locally and enabling the business to happen.”* (Interview B, 2017).

Financial Inclusion can happen when the whole ecosystem play together *“the ecosystem is changing heavily and is not only about refugees, it is about who is taking care of payments? there is apple pay coming into the picture, e-commerce, m-commerce, there is different parts are coming together in the system and the bank will have a role to play.”* (Interview B, 2017). Also the interviewee suggested that the bank could be doing some funding but the concern was; who is building the front and who is managing the customer relationship, who is dealing with the different parties, and that is still unknown for the bank. *“but definitely utilizing Fintechs and the innovation from there, is most probably the way how I think that quick solution could be found and for that, that the kind of overall environment has to be welcoming Fintechs.”* (Interview B, 2017) Moreover, Interviewee added that the environment has to be easy and it has to be less bureaucracy to setup your Fintech and getting the right advices bigger players such as banks can actually remove some barriers and help them providing the expertise and maybe even funding, *“but I believe the innovation will lay on the Fintech era.”* (Interview B, 2017).

Solving refugee's challenges to enter the financial system especially when it comes with proofing who you are where a refugee can't proof his identity due to the lack of identifications can be correlated with the fast movement happening from manually processing to something which is based on multiple factors *"So I have already seen a solution, we use something that is called biometric behavior, which means that, is it typical behavior for me? How I hold my mobile phone? What is my voice? what is my finger? Am I doing this at home? Is this typical occasion for me? And so on, and when we bring this all together and use biometrics its diffidently benefiting the customer"* (Interviewee B, 2017). The challenge in digitizing Identity for international banks is bigger, since regulations are different from country to another *"for international bank the challenge is that we could have a good conversation with one regulator in one country and we can get somewhere, but typically we invest heavily in that kind of technology if that is not valid in the next location and the location after that, the risk become big."* (Interview B, 2017). In contrast, the EU for example has much more harmonized regulations and the risk is much less because it was possible to invest and trust, *"but there is no question that in 2020 in all different circumstances we need to do that based on biometric behavior, the data and the digital era of that, and it is definitely going to benefit the customer finally"* (Interview B, 2017).

One of the factors that play a role according to mobile money Service provider interviewee: *"one of the main factors regarding the refugees, is the International Remittances for the cross-boarder remittances, which is not available now in the central bank, and once this door is open, of course there will be a huge potential for us to acquire, as there will be a very valid reason for us!"* (Interview D, 2017).

The Central Bank is moving heavily toward innovation due to the benefits it can come with *"we are preparing for Fintech incubator and accelerator in the kingdom"* (Interview A, 2017), where that can enable new financial technologies to thrive and test along side with the Central Bank, furthermore, this will enable new players to test regulatory environment in the developing phase as well and pushing innovation in this realm with the stakeholders, *"this is used through APIs so this can let people connect easily on our systems in terms of maybe JOMOPAY or other systems."* (Interview A, 2017).

The base for a new financial ecosystem in Jordan is still at the building phase, both our Bank and the Central Bank are open for innovation and they already contributed to the industry in

terms of innovations, however, they both look for a bigger role. Our bank contribution toward innovation in the country will mainly be offered through their API market, which will be completed on 2018. The API will allow individual developers, Fintechs and startups to work on their API, and that will be a key factor. Added to that, the bank will try ways like Fintech startups accelerator programs or Venture Capital funding and innovation Hub where such initiatives are already up and running by banks in certain markets. *“API market will help different systems to communicate to each other this is going to be a key factor of driving this innovation, and reduce the barriers to entry.”* (Interview B, 2017).

4.3 ID, eID and E-KYC

Among all interviewees, there is almost a clear consensus that e-KYC will benefit all stakeholders within the financial industry, regarding refugees, the central bank believes that the first barrier to allow refugees to access financial services is the ID *“We think the first barrier was not having an ID (identification). They were not allowed to presume or to lead any work or to have any jobs here because of lack of ID.”* (Interview A, 2017) however the central bank amended their instructions to allow refugees to use their UNHCR card provided by both the UNHCR and the Ministry of Interior affairs which is called tiered KYC *“we simplified KYC for refugees so using these documents they can open digital wallets and they can have access to financial services specifically we are encouraging micro finance institutions to integrate them to provide financial services for them.”* (Interview A, 2017). Moreover, The Central Bank leading big efforts to overcome the challenges faced from the regulatory bodies *“we are having collaborative meetings with AML/CFT bodies to not jeopardize or lets say the robustness of our financial system, we are taking a risk based approach in terms of AML/CFT to have them in place and to jeopardies the development and not to cause any complexity.”* (Interview A, 2017), all this show that the openness of the Central Bank in making rooms for innovation in the financial industry in Jordan.

According to Payments solution provider Interviewee, the objective of e-KYC *“is to facilitate and make it easy for the non-residents users and people who lives in a remote area, and places who does not have a bank account, and they don’t need a lot of paper documentation and work, to define and confirm their identity.”* (Interview C, 2017). Digital Identity for the central bank is considered very important and it can play a bigger role in facilitating financial inclusion due to the fact that multiple factors can be added where it can be utilized for wider uses *“Well it is vital , it’s a success factor for all our initiatives it’s really important and that’s what they lack,*

we know that they don't have this digital identity which we are now as you might know, we launched our credit bureau here in Jordan and we are thinking of alternate credit scoring for them to include many other information refugees can provide in terms of education background so we can develop this data base".(Interview A, 2017).

The Central Bank of Jordan has already started connecting the new Smart National ID with the Jordan Mobile Payment SWITCH *"For digital identity we already connected Jordan mobile payment switch with the national id platform as a first stage to explore projects into EKYC and we have met with leaders in the market with this regard and we are putting strategy and a plan to digitize this process."* (Interview A, 2017). Movement toward biometric authentication has already started within the Bank according interviewee, *"More and more we are focusing to use biometric, so our first time our new mobile banking will use a biometric authentication, more and more we use centralized pp and processes to utilize things in the branch"* (Interview B, 2017).

Furthermore having *"a certified reference, if this subject (e-KYC) will be certified by the central bank, and I think that, as long as we have this entity, then we can proceed with our service easier, and by this you will open the doorway for the mass, and facilitate for them to register with the service."* According to mobile money service provider, (Interview D, 2017).

E-KYC will benefit and facilitate financial inclusion in many ways *"I think it is necessary because our financial inclusion perspective or theme is we go to people the unbanked so they don't come to us. So having a digital ID will enhance their access to the finance and will give them the tool to access to SMEs."* (Interview A, 2017), and that will allow innovators to get funding and will definitely increase their financial inclusion especially among youth. The use of e-KYC among refugees will play a role in an important aspects *"First of all, that will provide them with more confidence and trust so electronic KYC will reduce tension around them because we know the issue of De-risking by banks and other financial institutions they don't want to deal with this risk, so we mitigate this risk between financial institution and refugees allowing refugees to do it and e-KYC might have a more dignified approach for refugees to access so they don't have to set in que to stand in ques and to provide data and private information in unacceptable way."* (Interview A, 2017).

According to mobile money service provider interviewee *“Again, you are accelerating the process, as sometimes the refugees, and especially after everything they went through, and they have experienced, they might have a sensitivity concerning dealing with untrusted agents, in addition, when it comes to a financial service, where anyone would like to have privacy in the financial transactions, so an (e KYC) system will actually help to remove all of these barriers”* (Interview D, 2017).

According to Bank interviewee E-KYC or E-signature will be a great tool, *“definitely easing the E signature and e-KYC enables us to provide the services”* (Interview B, 2017), added to that, interviewee mentioned that the key is to be able to provide to the customers with the relevant services when they actually need them, and that need leveraging data, so *“we need to leverage the data to understand more about our customers”* (Interview B, 2017), they need to understand if the customer would be benefiting for different type of products, these products could be saving products or could be credit product, *“and that has to be offered on the right time for the relevant customer for the relevant reasons.”*(Interview B, 2017).

Also, mobile service provider interviewee stated that: *“I see that the eKYC, if its accepted, along with ID, with the API’s integration, for example with the (department of civil status), or just a centralized screening directory, and from our side, as a (PSP), we check and perform the screening directly with this system.”* (Interview D, 2017).

4.4 Implementation, Challenges and Barriers

According to the Bank interview, there is a willingness to be a part of an electronic KYC system *“we would do everything we can to do it as quickly as possible and do it in the right manner.”* (Interview B, 2017), Furthermore, the benefit for Jordan is that *“we don’t have to be the innovator and test the Market, we can actually benefit from the systems which has been delivered by number of banks across the world”* (Interview B, 2017). Additionally, e-KYC is believed to be more reliable *“when I look at somebody’s signature in my own eyes I mean how easy it could be to fake that for me.”* (Interview B, 2017), In addition, trying to do different things, when talking about data, and different types of analysis, and what can be done with the data, and analyzing if the signature is really from the person. Finally the point is do financial service providers really know who this party is, and how are they clear about him, *“when we*

state that, it is never going to be 100%, instead when we look for physical things, biometric things, it is 99.something , but the accuracy of taking somebody's finger prints, or eye scan or anything, it's going to be significantly improving rather than trusting what humans being actually do." (Interview B, 2017).

According to payments solution provider, the main challenge will face an electronic KYC initiative is the legal framework to support the system, "*there should be laws, and legislations, that is supported by the central bank, if there will be legislations by the central bank.*" (Interview C, 2017), after that they believe digital identity will be applicable and this system will be considered and can go further in the process. Interviewee added an example where the copy of the cheque was not legal in the court before, however now, using the copy of an electronic cheque given by the (electronic clearing system) is considered legal in court "*the digital identity would be the same thing.*" (Interview C, 2017).

According to all interviewees, there is also many challenges and barriers will face the success of implementing an electronic KYC system, mainly they are legal, culture, trust, and IT challenges, "*There has to be a strong network, where this is very important, a secured network, with high technological features, and most importantly a secured system, as we are dealing with financial data and in a financial sector, and security here is key.*" (Interview C, 2017).

According to mobile service provider interviewee "*the biggest challenge is the mindset of the people, and their mentality, where you will change their situation from day one, as they used to be an unbanked people, and switching them to this digital new system is a big challenge, where the education of these people is not helping them to trust these new systems, as its sometimes concerned with their religion, culture and so on.*" (Interview D, 2017).

The culture barriers and national security is another issue are considered as a challenging situation according to the central bank, given the fact that there will be different stakeholders as well as with different perspectives. "*changing the cultural approach toward this on the other side of the formula; on merchant on people on the financial institutions, businesses, this is another change which we have to be tackled by more financial education and more campaigns.*" (Interview A, 2017). In addition, coming up with the rules where everybody can comply with is slightly difficult where there is several providers and a number of suppliers at the same time for the similar type of business "*and now the question is; if I take a biometric it could be fingerprint, it could be finger vein or iris scan, and I will say I am now 99.16% sure that this*

person is the same like last time, so where we setup these rules, where we setup this tolerance, how we order it and make sure that it is not the one bank, it is across the different banks and financial institutions who need to follow and when we define regulatory elements and laws and regulations there, the key is that we need to define them very openly, so we might say that a payment has to be secure end to end, but then somebody needs to translate the point; what that means from technical point of view, for somebody it means that's it ok to https and for somebody it mean its VPN and two ways XXL. So being able to provide regulatory environment which is open enough but still specific so that the banks can also rely that as long as I comply with this XYZ rules I will be in a good position and defining these rules and levels and SLA's, KPI's toolkits and when it comes to different technical suppliers the dimension are slightly different so to come up with principles about what can be done I would assume it is some how doable, but when it comes to the kind of level of details; where to put the level, what is the level whether it is finger print or finger vain, finger vain is much more accurate so can finger vain be used. What's about finger prints from another suppliers so coming up with that level of details will be challenging.” (Interview B, 2017).

The DNA and experience will play an important role when developing and implementing e-KYC system, especially in the Jordanian market, since API economy is still not mature enough “*So, API economy is now partly introduced and existing lets say in Europe, which means that we have had various parties and now lately including banks and when I say lately we are talking about some years, who has been working on APIs, studying APIs, learning from APIs.*” (Interview B, 2017). Today in Jordan market, we have very limited skills and capabilities around integrating, opening APIs, defining the standards, “*so the risk what I'm stating here is the experience level in the regional parties, could be suppliers, IT providers, developers, and specialist in this system, the technology itself is tested in the global market.*” (Interview B, 2017). Furthermore, privacy issue is critical in this regard, “*its not about the system, and the technology, it's how we use it, and then when we use it incorrectly that can create different of privacy issues.*” (Interview B, 2017).

If the systems are used correctly, the privacy issue would not be that high. But when it is about IT technology and data, the impact will be catastrophically huge, “*so if somebody gets my driving license, I think I can call and change my driving license, now I have a new ID, if somebody gets on hold on the data, how my finger print look like, I cannot call the customer,*

and say could you please change your finger. So, it's like a black and white, I cannot compromise, by magically say change your eyes please!." Interview B, 2017).

According to Mobile Payments solution provider customer data privacy is a key, the entry to the data must be authenticated and certified by user name and a password and all privacy requirements should be implemented, *"and even when you want to connect to third party, authentication should be available of course."* (Interview C, 2017) Secondly: recovery assurance, for example, *"if I'm using a network from Zain (Telecommunication company), and something happens, with their systems, we should have an alternative, network, from another supplier like Orange or Umniah."* (Interview C, 2017).

Bank interviewee believe the lack of IT infrastructure will play another major role in the success of e-KYC system, since in Jordan there is a limited number of suppliers compared to the UK for example, where there is thousands of cloud providers, and talking about having the cloud outside Jordan or outside the middle east and having the cloud outside Jordan will be a huge topic so *"These are the IT infrastructure challenges, and a big help would be, if there would be, a local supplier for example for cloud services!"* (Interview B, 2017). Data security another factor, when you introduce something new, such as e-KYC, it's not about figuring how it should look like, because that can be done, *"but there are so many moving pictures and pieces, in this kind of whole architecture"* (Interview B, 2017). It is also about what needs to be delivered? and how much testing and how much piloting would be required? *"we can pilot and pilot, and prove that it works before it actually lunched, How much testing and improvement and then piloting that would be the big challenge of it."* (Interview B, 2017).

As well our mobile money service provider interviewee said: *" the legal and IT are two different domains, and it is sometimes difficult to translate the legal field into a technological system, and consequently you will be discovering only by practice, things that you need to revise, and sometimes do things in backwardly, to develop and improve the system, which can be considered a challenge."* (Interview D, 2017).

"At least to build the trust in people, there should be an existence for governmental entity that will safeguard and ensure the users, which is the central bank, which have already started initiating a huge effort to spread the awareness towards this service, and after that, people

will start looking for the providers of this service". According to mobile money service provider, (Interview D, 2017)

Finally, according to Payments solution provider, the different perspectives from everybody in the ecosystem might increase the barriers to the success of an e-KYC system "*so, we should come up with a recipe to serve everyone, in general, so the main goal is to have a high level financial inclusion, and to promote the development of the financial inclusion, and the banking awareness, so to have all the stakeholders in workshops and put things into perspective, and to form a committee that will play a major role in this subject to reach to our desired solution.*" (Interview C, 2017).

Discussion and Conclusion

5.1 Implications for Theory

In the theory chapter, an overview about the importance e-KYC as an accelerator for financial inclusion was highlighted, in addition the main factors affecting the success of its implementation was studied. Internal challenges are challenges financial institutions are facing within the firm when they engage in an e-KYC implementation. External challenges on the other hand, are challenges firms experience with their collaborating partner(s). These challenges go beyond the firm level.

In total, 4 main internal challenges were identified. First, the internal factors are internal regulations, security, internal IT infrastructure, and experience. In turn, internal regulations are linked with the level of security and privacy that must be obtained to assure the highest level of data protection, as well as complying with international KYC requirements imposed by regulators, and these factors will affect the implementation. Internal IT infrastructure will affect the ability and possibility to integrate with external systems and networks, especially the ability to connect internal systems with external systems and third parties. In the theory chapter, we also learned that experience will impact the success of the process, as such new models require dealing with new type of systems such as APIs, while in Jordan the experience in developing and integrating with these API's still not experienced and tried enough.

In today's complex business environment, it is needed to have collaboration with different external partners to implement new innovative system such digital identity or e-KYC, and to improve the quality of such new innovations, which means shifting towards a collaborative innovation. The integration of new identity system benefit all the collaborative parties as well as the whole business ecosystem. In turn, the external change factors are culture, environmental, technical and laws.

The culture consists of knowledge and education about the benefit of an e-KYC system, and whether our culture will trust such model, as it will be dealing with sensitive data, moreover, the culture of firms and their openness to new innovations, finally the culture of law makers, whether they will accept new model that will approve data sharing between third parties where it is considered sensitive as well. We also learned in the theory portion that the environment of

the business ecosystem has to play a role where the environment must support innovators and developers to contribute to ecosystem. Thirdly, the technical part consists of the standards levels that must be agreed on within the ecosystem, where all related parties must adopt with the same regulatory environment which is open enough but still specific. Finally, Laws supporting the change must come from high level body and it must be approved on a country level, and legislations must be circulated across the related governmental bodies, and this will decide if e-KYC system will be accepted or not.

In general, it can be concluded that when regulators and financial service providers engage, they experience a number of challenges that need to be managed. This master thesis has highlighted the main barriers of implementing a new model of proofing identity.

5.2 Implications for Practice

This section will shed light on the major challenges that will face an implementation of an e-KYC system, these challenges were described in the preceding section. The guidelines contain recommendations for entrepreneurs, financial institutions and government. Although these guidelines are particularly relevant for the country under investigation (i.e. Jordan), these guidelines may also be suitable to other countries which fall beyond the scope of this master thesis.

The Central Bank of Jordan plays a crucial role in the success of new innovative model in proofing identity. Therefore, the first step the central bank should take is to establish Regulatory Sandbox (Set of rules that allows innovators to test their products/business models in live environment without following some or all legal requirements), this initiative will allow innovators to test alongside with all stakeholders. In addition, the different perspectives within the ecosystem, can be minimized through collaborative meetings, those meeting will allow different parties to engage and discuss win-win strategies that will benefit them and the final customers. Fintech Hubs and RegTech Hubs have been implemented across different countries where it is believed to be a great way to test, learn and share experience and knowledge.

In today's fast moving world, governments are sometimes unable to follow-up with the changes happening in the ecosystem, in such circumstances, a good approach will be a bottom up approach, where it will be a practical idea that stakeholders discuss the benefits of establishing e-KYC system that can benefit the whole population and deliver their insight to regulators and start some talks, since e-KYC will not only provide a better tool to enter the financial system, but also it could benefit in many areas as mentioned in the literature section, such as governmental services, education and health care services.

e-KYC system will also allow providers not only to facilitate the entrance to the financial system, as it will also allow financial service providers to provide different products at the relevant time, moreover, it will e-KYC will be more reliable and accurate, and in practice that means less fraud cases.

Finally, this master thesis addresses the major challenges and barriers allowing not only refugees, but also the whole unbanked society to integrate and benefit from the financial

services, more specifically how e-KYC will facilitate the on-boarding process of individuals and refugees, and what are the challenges will be faced if such new system will be implemented. These challenges should not merely focus on the inputs and outputs of the collaboration, but should assess the whole process including the learning opportunities acquired through partnerships.

5.3 Limitations of the Research Findings and Further Research

The research findings of this study contain few limitations because of the nature of the qualitative research method. First of all, I was planning to conduct an interview with NGO party that work with refugees, but, unfortunately the interviewee apologized for not being able to do the interview. Secondly, the results of this study are based on qualitative interviews which mean that research findings and results are mainly the researcher's interpretations of the interviewees' personal views. That is the reason why the results of this study should be thought as individuals' views rather than proven facts. Of course, when talking about a new and untried model, every interviewee pointed out their own speculations, and emphasized their predictions due to the lack of experience in the area. Thus, some findings may be too optimistic and give a highlighted positive view of implementing the new system. In addition, e-KYC or digital identity, is so new that some interviewees did not know well enough about it. In addition, the amount of interviewees, which is relatively small covering only 3 qualitative interviews, is another limitative factor. In addition, all interviewees were from Jordan, which means that the research findings and results cannot be directly applied in other geographical areas.

The subject of this thesis is so fresh that there is room for a lot of further research. In the financial service ecosystem changes are happening so rapidly that even this study should be refreshed after a relatively short time period. Of course it would be useful to carefully research and illustrate the Jordanian financial ecosystem and especially the new financial service providers such as payment service provider or mobile money providers. In addition, it would be very interesting to research how the cooperation between different financial players could be organized, because as the research findings of this thesis indicate, the new market entrants are very willing to cooperate with external partners. Finally, it would be useful to the factors affecting technology acceptance theory among the Jordanian population to have a better understanding about their acceptance toward new technologies especially when dealing with sensitive products combining money and identity.

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