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The Development of FinTech in Nairobi: Contributions to Financial Inclusion and Barriers to Growth

Masters in Management Thesis 2017

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Abstract

Key Words FinTech, disruptive innovation, financial inclusion, emerging markets, finance, technology, entrepreneurship

Purpose This in-depth study explores: why Nairobi has developed into a renowned FinTech hub; what the barriers are to further growth for FinTech companies; and how FinTech is perceived to be contributing to the broadening of Financial Inclusion.

Methodology Mixed-methods approach comprising of 21 semi-structured interviews, along with informal interviews, policy analyses and comprehensive bibliographic research.

Findings Nairobi has emerged as a Financial Technology (FinTech) hub due to the pioneering success of M-Pesa, the inadequacy of incumbent financial institutions and Kenya's conducive business and regulatory environment. However, FinTech companies in Nairobi face a number of challenges inhibiting their growth, such as: shortages of managerial and software-development talent, poor access to data and information, and insufficient levels of credit and investment. In regard to financial inclusion, FinTech is undoubtedly allowing many formerly excluded Kenyans to access financial products and services. However, these Kenyans tend to be on the middle of the economic pyramid, and also owners of smartphones, whereas those at the bottom of the pyramid remain financially excluded. There is also evidence that some FinTech can actually do harm, notably due to a lack of regulation, which therefore permits companies to offer easy-access, high-interest credit to financially illiterate consumers.

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1. Abbreviation, Acronyms and Definitions

AML	Anti Money Laundering
APR	Annual Percentage Rate: Generally refers to annual interest rate of loans.
Bottom of the Economic Pyramid (BOP)	The bottom of the global economic pyramid refers to more than four billion people with per capita incomes below \$1,500 per annum (purchasing power parity) that live in poor or extremely poor conditions. (Louw, 2010)
Emerging Market	“A developing country, in which investment would be expected to achieve higher returns but be accompanied by greater risk.” (Financial Times, 2017)
Feature Phone	A mobile phone that incorporates features such as the ability to access the Internet and store and play music but lacks the advanced functionality of a smartphone. (Oxford Dictionary, 2017)
Formal Financial Institutions	Government chartered institutions, subject to supervision and banking regulations (Ledgerwood, 1998)
Financial Inclusion	“A state in which all working age adults, including those currently excluded by the financial system, have effective access to the following financial services provided by formal institutions: credit, savings (defined broadly to include current accounts), payments, and insurance” (GPFI, 2016, p.12).
Financial Literacy	“The combination of consumers’/investors’ understanding of financial products and concepts and their ability and confidence to appreciate financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being” (Miller et al. 2009, pp.2)
FinTech	A portmanteau of ‘financial’ and ‘technology’, ‘FinTech’ is a combination of technology and innovative business models which change, disrupt or enhance financial services/products.
GDP	Gross domestic product
Informal financial services	Financial services such as loans and money transfers provided outside of government supervision and regulation and not legally registered at national level. (Ledgerwod, 1998)
KYC	Know your customer
Lipa Na Pesa	Safaricom’s mobile payment platform for bills, goods and services

M-Pesa Safaricom’s mobile money transfer service

MSMEs Micro, small and medium enterprises:

“**Micro enterprise**’ means a firm, trade, service, industry or a business activity— (a) whose annual turnover does not exceed five hundred thousand shillings; (b) which employs less than ten people.” (Micro and Small Enterprises Act, 2012 pp.7)

“**Small enterprise**’ means a firm, trade, service, industry or a business activity— (a) whose annual turnover ranges between five hundred and five million shillings; and (b) which employs between ten and fifty people.” (Micro and Small Enterprises Act, 2012 pp.8)

‘**Medium enterprise**’ means a firm , trade, service, industry or a business activity employing 51-100 employees and whose capital investment is not in excess of Kshs 30 million. (United Nations Development Programme, 2015, pp.14)

SACCO Savings and Credit Cooperative Organization: Semi-formal not for profit financial cooperative, usually registered at state level and with credit bureau. (Kenya Diaspora Sacco, 2017)

Side Hustle An additional income source aside from one’s primary employment or income generation.

Smartphone A mobile phone that performs many of the functions of a computer, typically having a touchscreen interface, Internet access, and an operating system capable of running downloaded apps. (Oxford Dictionary, 2017)

TelCo Telecommunications company

2. Introduction

‘FinTech’, a portmanteau of ‘financial’ and ‘technology’, is used by commentators as the catch-all term for innovations targeted towards disrupting the long-dominant incumbent financial sector (PwC, 2017). Financial Technology (hereafter ‘FinTech’) has the potential to disrupt and transform finance in myriad ways, particularly in emerging markets: from payments, to insurance; from credit to financial compliance. But what is meant by FinTech? Surprisingly, a simple definition is difficult to pin down, particularly within the academic literature (Puschmann, 2017; Zavolokina, Dolata & Schwabe 2016). As a consequence, we find it necessary to form a working definition for the purpose of this paper:

FinTech is a combination of technology and innovative business models which change, disrupt or enhance financial services/products.

Nairobi is often hailed as a FinTech hub amongst emerging markets (Deloitte, 2017), particularly since the inception and impressive growth of mobile money transfer platform, M-Pesa. Following in M-Pesa’s footsteps, a variety of other companies designing innovative digital financial products and services have since emerged in Nairobi, aiming to disrupt other aspects of the formal financial sector.

This in-depth study into the Nairobi FinTech space is broken down into three sections: why Nairobi has developed into a renowned FinTech hub, what the barriers are to further growth for FinTech companies, and how FinTech is perceived to be contributing to the broadening of financial inclusion.

The first section, related to the factors that have contributed to the formation of the FinTech sector in Nairobi, finds that the innovation environment forged by M-Pesa and the inadequacy and exclusionary practices of the formal finance sector laid the foundations for FinTech to grow. Other contributing factors are Kenya’s relatively open business and regulatory environment; entrepreneurial society; and strong internet and mobile telecommunications infrastructure, all of which support the development of digital enterprises. Though some of these factors are context-specific, such as the rise of M-Pesa, others such as the inadequacy of the existing formal financial sector and the enabling regulatory environment could be applied to other locations.

The second part of this study is focussed upon exploring the barriers to growth facing the disruptive FinTech companies. Though Nairobi is regarded as the foremost FinTech hub in Africa and many new FinTech enterprises choose to locate or launch their operations in Nairobi (Aglionby, 2016), it is not without its challenges. The predominant growth barriers facing FinTech enterprises are: insufficient access to data and information; regulatory challenges; a lack of credit and investment; shortages of both managerial and software-development talent; and the size and maturity of the Kenyan market. This section makes a valuable contribution to the emerging literature on FinTech, as though there have been studies into the criteria of what makes an effective FinTech hub (Deloitte, 2016; Deloitte, 2017), there has been little research into the barriers to FinTech growth, particularly in emerging market contexts. The choice to investigate the phenomena of FinTech was therefore due to the dearth of academic literature focussed on the subject (Puschmann, 2017).

With banks being unwilling or unable to extend formal financial services to the majority of the population (Carbó, Gardner & Molyneux, 2005), the final aspect of this thesis explores the relationship between disruptive FinTech in Nairobi, and the broadening of financial inclusion. Financial inclusion can be broadly defined as:

‘a state in which all working age adults, including those currently excluded by the financial system, have effective access to the following financial services provided by formal institutions: credit, savings (defined broadly to include current accounts), payments, and insurance’ (GPFI, 2016, pp.12).

Many commentators have argued that disruptive FinTechs are providing opportunities for those who are financially excluded to utilise financial products and services like never before (Gabor & Brooks, 2016). This paper argues that FinTech is indeed contributing to creating a more inclusive financing ecosystem in Kenya, particularly in regard to increasing the availability of credit and methods of payments. However, there are a number of caveats to this. Firstly, though FinTech’s general target audience tends to be lower down on the economic pyramid than that of the formal financial sector, FinTech companies rarely target those at the bottom of the pyramid, preferring instead those at the middle. Secondly, FinTech in Kenya is intrinsically tied to smartphone usage, and whilst penetration is increasing, not possessing a smartphone is effectively a further exclusion from accessing finance. In addition, there is some indication that FinTech can actually do harm, notably through high-interest rate easy-access loans offered through smartphones, and predatory collection practices on defaulters - a phenomena that has been chronically under-investigated.

Data was collected over a one-month field visit to Nairobi, in which 21 semi-structured interviews were conducted both with FinTech companies and also other actors involved in the broader financial and technology sectors. Supplementing these was an analysis of regulatory and economic policy, along with a number of additional informal conversations and empirical observations. The geographical area was selected because of the prominence of Nairobi's FinTech reputation (Deloitte, 2017). It is hoped that this thesis will be particularly relevant to stakeholders involved with FinTech, finance, technology, financial inclusion, international development, disruptive innovation and enterprise in emerging markets, whether they are from the private sector, third-sector, government or academia.

The remainder of the thesis is structured as follows: section 2 outlines the purpose and research questions. Following this, section 3 presents an in-depth review of the literature, beginning with an exploration of Kenya's socio-economic context, as well as a summary of financial inclusion both generally and context-specific to Kenya. In addition, a review of the existing literature around Financial Technology is conducted, with a focus on the different channels of FinTech, disruptive innovation, and examples of FinTech in action in Kenya, notably M-Pesa. Subsequent to the literature review is the methodology in section 4, which describes how data was both collected and analysed, along with our general approach and ethical considerations. Sections 5 and 6 - the analysis and discussion of the data, form the bulk of the paper. These are broken down into three sections, with the overall aim being to uncover the underlying factors that allowed the fruition of the FinTech sector in Nairobi, the barriers to further growth for FinTech companies, and finally the perceived implications FinTech has for financial inclusion. There is a distinct lack of academic literature on FinTech and even more absent is academic literature based upon primary research relating to FinTech's relationship with financial inclusion in emerging markets. This paper is therefore a broad starting point for further exploration into the actualities of FinTech and presents an array of findings which merit further investigation and discussion.

3. Research Purpose & Questions

Contributing to existing academic, economic, and institutional literature on the topic of FinTech and financial inclusion, the purpose of this thesis is:

- To explore why Nairobi has developed into a renowned FinTech hub, what the barriers are to further growth for FinTech companies, and how this FinTech is perceived to be contributing to the broadening of financial inclusion.

To achieve this, the following research questions are addressed:

1. What are/ were the factors which contributed to the development of the FinTech sector in Nairobi?
2. What are the existing barriers inhibiting the further growth of FinTech companies in Nairobi?
3. How is FinTech perceived to be contributing to the broadening of financial inclusion?

4. Literature Review

4.1. Kenya's Socio-Economic Context

Situated on Africa's East coast and bordering Ethiopia and South Sudan to the North, Somalia to the North-East, Tanzania to the South, and Uganda to the West, Kenya is home to around 47 million people (CIA, 2017). Like many developing countries, Kenya's population is growing rapidly. With a median age of 19.5, and almost 60% of its inhabitants under the age of 25, Kenya is one of the 'youngest' countries in the world (Index Mundi, 2016). In terms of its economy, Kenya is the 7th largest in Africa (World Bank, 2015a) and has a nominal GDP per capita of \$1,422 (IMF, 2016).

Nairobi, the country's rapidly-enlarging capital city and location of this study, has a population of 4.1 million (United Nations, 2016). This is expected to climb to 5.9 million by 2025, and 18 million by 2050 (Hoonweg & Pope, 2014). It is not just the city's population that is growing rapidly, but its economy too. Nairobi's real GDP rate is forecast to grow by 7.6% in 2017, the third fastest for any city in Africa (Euromonitor International, 2017).

As the region's economic powerhouse, many global organisations, from international aid agencies such as the United Nations and Red Cross, to multinational organisations like Coca Cola and Google, have situated their African headquarters in the city. There are a number of factors underlying why organisations choose to locate in Nairobi. Kenya's service sector is a vital driver of its economy, contributing 63.4 percent of its GDP (African Development Bank, 2014). An efficient service sector is heavily dependent on having both high-speed internet and good airport connectivity, both of which are present in Nairobi. At 15 megabytes per second, Kenya's internet is the fastest out of any country in the Middle East and Africa, largely due to the recent installation of a number of fiber optic cables (Akamai, 2016; Mulligan, 2015). Nairobi's main airport, Jomo Kenyatta International Airport (JKIA), serves approximately 6 million passengers per year (African Development Bank, 2015). Another factor that supports business in the country is Kenya's relatively open economic environment, in which there are very few differentiations made between domestic and international businesses and investors (US Department of State, 2015). In addition, recent business reforms and a supportive regulatory environment have catalysed Kenya's ascent up the World Bank's *Ease of Doing Business* table, which

ranks companies globally. Kenya climbed 21 places between 2016 and 2017, and is now placed 92nd out of the 190 countries monitored (World Bank, 2017).

Ten years ago, the Kenyan government launched its three-pillared ‘Vision 2030’ plan, which acts as a roadmap for the country’s social, political and economic development, with the intention to advance Kenya into a “newly industrializing, middle-income country providing a high quality life to its citizens by the year 2030” (Government of Kenya, 2007). Economically, the Kenyan government is aiming for an ambitious 10 percent growth in GDP per annum until 2030. The social aspect of Vision 2030 is focussed upon creating a fair, cohesive, sustainable and safe society. Finally, the political dimension of the plan aims to achieve “a democratic political system founded on issue-based politics that respects the rule of law, and protects the rights and freedoms of every individual in Kenyan society” (Government of Kenya, 2007). The economic pillar identifies six important areas of the economy that will catalyse the achievement of the vision: agriculture and livestock; manufacturing; business process outsourcing; tourism; wholesale and retail trade; and financial services (Mwega, 2014).

For an economy the size of Kenya, its financial sector is comparatively advanced, though there remains much scope for improvement if it is to reach middle-income status by 2030 (Mwega, 2014). One area in which the financial sector is lagging is the expansion of access to credit, which only grew by 19 percent between 2000 and 2010, substantially lower than many countries in Africa (Griffith-Jones and Karwowski, 2013). Mobile telecommunications operators have positioned themselves as key players in the financial sector in recent years. Mobile phone penetration in Kenya is high, rising to 90 percent in 2016. Smartphone usage is also growing rapidly, increasing from 27 percent in 2014 to 44 percent in 2016 (Kemibaro, 2016). Much of this growth is driven by the proliferation of low-cost Android models, which can cost as little as \$30 (Kemibaro, 2016). Four mobile network operators dominate the Kenyan telecommunications market: Safaricom, the company behind M-Pesa, which controls 63.8 percent, Airtel (18.7%), Orange (10%) and Equitel (7.5%) (Communications Authority Kenya, 2016).

Over 85 percent of the adult population in Kenya utilise mobile financial services such as M-Pesa to regularly pay for products and amenities, such as household bills or school fees (Finkle, 2016). This figure far exceeds the proportion of Kenyans who use a traditional bank account, which stands at 38.4 percent, and furthermore, only 18 percent of those with bank accounts use them at least weekly (FSD Kenya, 2016; Christi and Barberis, 2016). Internet usage in Kenya is the highest in Africa by a substantial margin. Data indicate that internet penetration stands at 77.8 percent of the population, with

only five other African countries surpassing 50 percent (Tunisia, 50.5%; South Africa, 51.6%; Morocco, 57.3%; Seychelles, 57.6%; Mauritius, 62.7%) (Internet World Stats, 2017).

4.2. Financial Inclusion

Financial inclusion has entered the global development agenda in recent years, due to the increasing recognition of its importance in reducing poverty and socio-economic inequality, as well as its role as a key contributor to the advancement of sustainable and equitable economic growth (World Bank, 2015b). Inclusive financial services are integral to a functioning and efficient economy, allowing both individuals and businesses to save and invest money, access credit, buy insurance for themselves or their belongings, and mitigate risks (Manyika et al. 2016). Put simply, financial inclusion refers to:

‘a state in which all working age adults, including those currently excluded by the financial system, have effective access to the following financial services provided by formal institutions: credit, savings (defined broadly to include current accounts), payments, and insurance’ (GPFI, 2016, p.12).

However, in recent years, measurements and conceptualisations of financial inclusion have evolved from the simple dualistic notion of inclusion and exclusion, into a more nuanced and multidimensional approach. The African Development Bank (2013) now argues that access, usage and quality are equally important strands of inclusive financing (Figure 1):

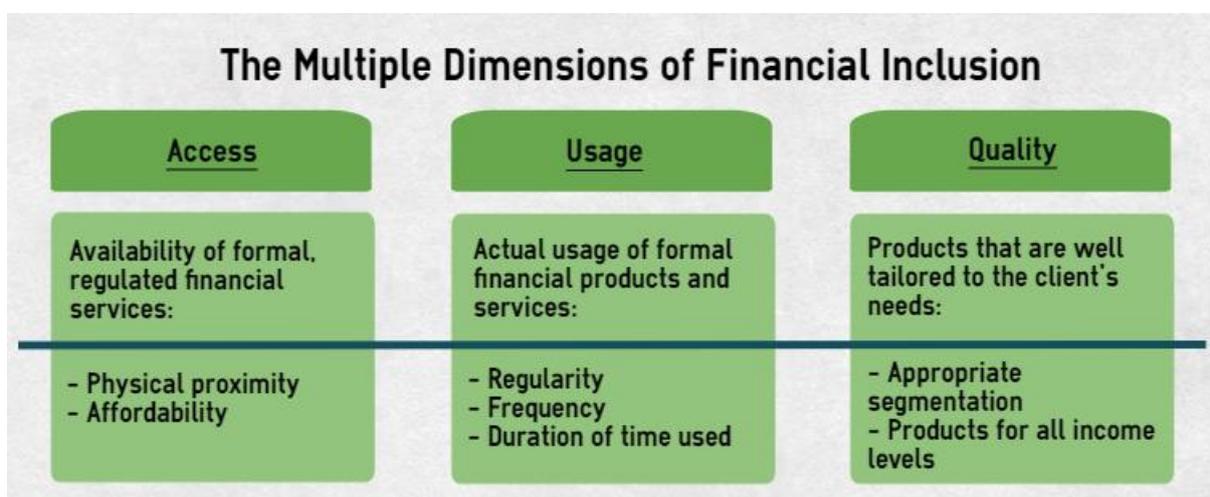


Figure 1 - The multiple dimensions of financial inclusion - adapted by authors from African Development Bank (2013)

Thus far, four country-wide surveys have been conducted in order to investigate the financial inclusion landscape in Kenya, and each has measured the access, quality, impact and usage of financial services across the nation (Central Bank of Kenya & FSD Kenya, 2006; 2009; 2013; 2016). The FinAccess 2016 study notes that 75.3 percent of Kenyans now use at least one form of formalised financial service, a figure that has doubled since the first study in 2006. However, as the table below shows, this increase can be significantly attributed to the rise of mobile financial services, which have increased from 0 percent to 71.4 percent over the same time period (Figure 2):

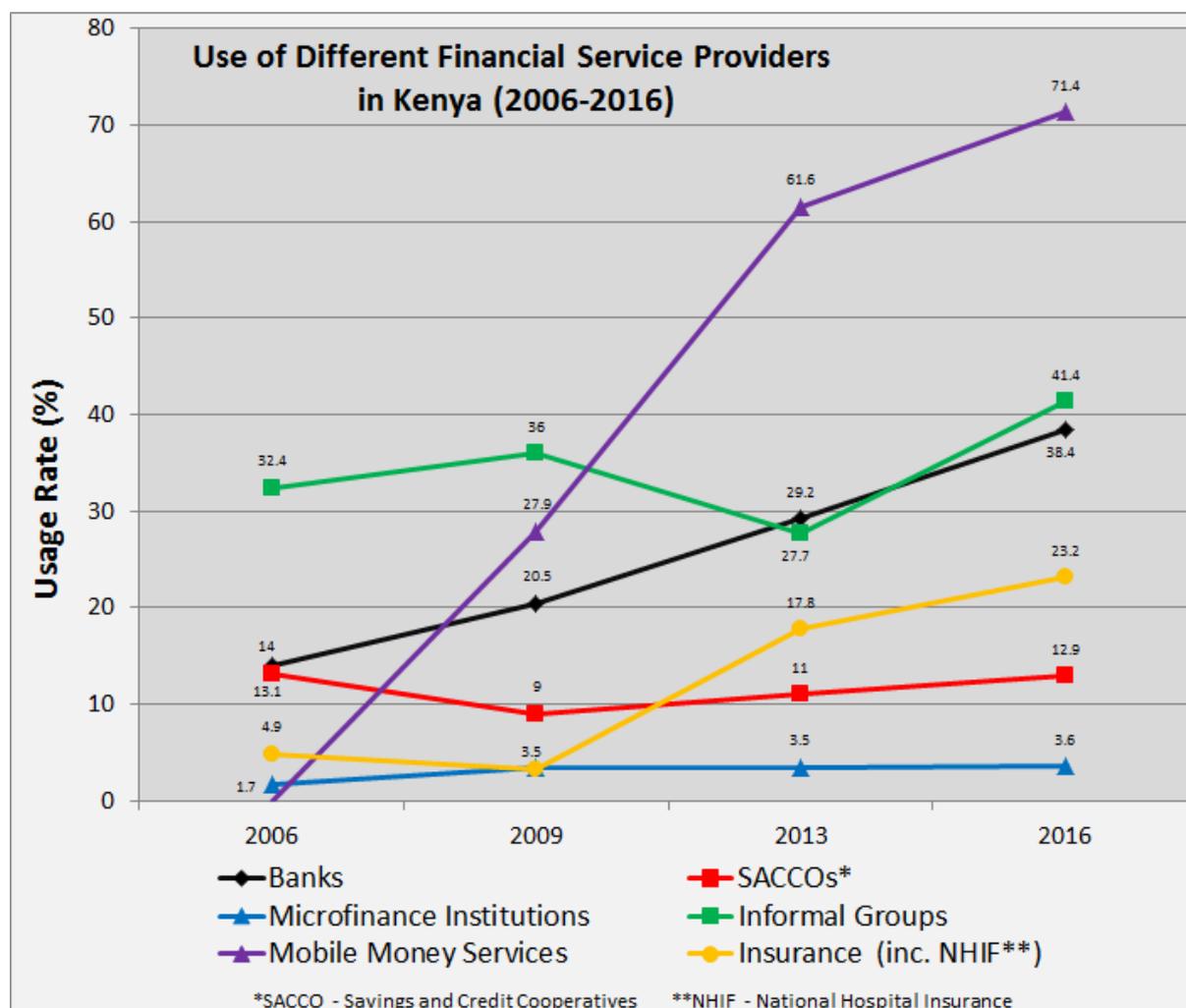


Figure 2 - Use of Different Financial Service Providers in Kenya (Central Bank of Kenya & FSD Kenya 2016).

Adapted by the authors.

At both the macro (Young-Park & Mercado, 2015) and micro level (Lämmermann, 2010), there is a direct correlation between levels of poverty and financial exclusion. This is particularly problematic in developing market economies because it tends to be the poorest members of society who are

disproportionately financially excluded (Wentzel, Diatha & Yadavalli, 2016). For example, across Africa, individuals in the wealthiest 20 percent of society are twice as likely to have a bank account than those in the poorest quintile (African Development Bank, 2013). Banks often regard poorer cohorts of society as unprofitable or risky (Baradaran, 2015), which therefore perpetuates poverty, as poor people are pushed towards more precarious or higher-interest sources of finance (African Development Bank, 2013). Yet the benefits of financial inclusion for society as a whole are high. Studies have indicated that inclusive financing can lead to households investing in the education of their children, increased resilience against economic crises and ultimately, an increase in household wealth (Bruhn & Love, 2014). Similarly, other demographic cohorts, such as women (MFW4A, 2013; InterMedia, 2015), young people (FSD Kenya, 2016), and those living in rural areas (Mujeri, 2015) are disproportionately less likely to be financially included.

Throughout this thesis, the wealth pyramid is referred to often, particularly in relation to a customer's position on it. The wealth pyramid refers to a demographic depiction of a population's income status. Those at the top of the pyramid have higher-incomes, but they are also much fewer in number compared to the larger proportion of people at the bottom who have lower incomes. Many scholars have advocated focusing more business investment towards those at the bottom of the pyramid, due to the eagerness of its occupants to utilise new innovations (Prahalad, 2005).

3.2.1. Financial Literacy

Kenya's financially literate population stands at 38 percent according to the Standard & Poor Ratings Services' Global Financial Literacy Survey (Klapper, Lusardi & van Oudheusden, 2017). The OECD defines financial literacy as:

'the combination of consumers'/investors' understanding of financial products and concepts and their ability and confidence to appreciate financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being' (Miller et al. 2009, pp.2)

Although research indicates mixed responses to the utility of financial education programmes (Mandell & Klein, 2009; Kefela, 2010; Braunstein & Welch, 2012), Wachira & Kihui (2012) argue that there should be an increase in such programmes to better measure their effectiveness. This approach has been adopted by a number of institutions in Kenya with FSD, Equity Bank (partnered with The Mastercard

Foundation), KCB (Partnered with Visa International), Barclays, and Tap and Reposition Youth (TRY), all rolling out schemes in an attempt to address financial literacy (Njoroge, 2013; Kefela, 2010). These schemes are based on the evidence provided by a number of studies which indicate that those who are less financially literate are more likely to encounter challenges in relation to credit, debt management and savings (Wachira & Kihuu, 2012; Kefela, 2010; Miller *et al.* 2009).

Miller *et al.* (2009) link financial literacy to national economic performance, suggesting that when there is a knowledge gap between financial institutions and consumers, there is a threat that this can increase the likelihood of suboptimal choices by consumers. They go on to argue that more financially informed consumers create greater demand for competition amongst financial institutions, that in turn encourages the products and services offered to be priced appropriately and fairly (Miller *et al.* 2009, pp.3). Responding to the increasingly financially literate population are a number of innovative enterprises who are leveraging the demand for more complex financial solutions and models (Kefela, 2010).

Njoroge's (2013) research highlights a positive correlation between the success of SMEs, and financial literacy in Kenya. Although Wachira and Kihuu (2012) argue that financial literacy only has a nominal impact upon financial decision making (choice of using informal/formal/semi-formal financial institutions) in Kenya, they do assert that financial literacy impacts greatly upon financial inclusion. They show that increased sensitisation can reduce the number of people that are financially excluded in Kenya (Wachira & Kihuu, 2012). This is coupled with a positive correlation between general education level and access to finance, stating that there is an incremental increase in access to formal finance by 8.5 percent with each level of education (Wachira & Kihuu, 2012, pp.47), this is further supported by CBK and FSD research (2016) (see figure 3).

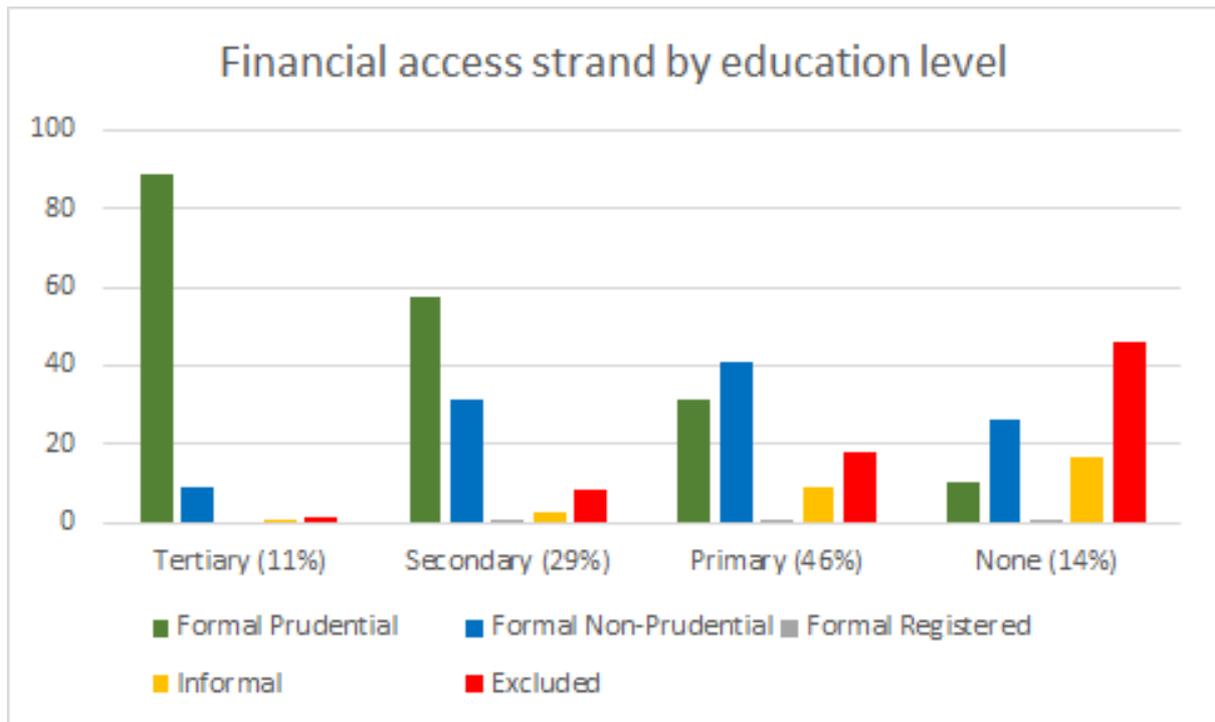


Figure 3 - Financial access strand by education level (Central Bank of Kenya & FSD Kenya, 2016). Adapted by the authors.

Therefore, while research and programmes concerning financial literacy are contributing to insights into the benefits and outcomes of the impact upon financial decision making, we can have confidence that the impact is positive for financial inclusion (Kefela, 2010; Wachira & Kihiu, 2012).

4.3. Financial Technology (FinTech) & Disruptive Innovation

4.3.1. Defining FinTech

FinTech is a portmanteau of ‘financial’ and ‘technology’ and can broadly be defined as the “use of technology to deliver financial solutions” (Arner, Barberis & Buckley, 2016, p.1). However, due to its wide scope, Dorfleitner et al. (2016) argue that there is no universal definition of FinTech. They show that there are many similarities across most FinTech offering companies, however, there are also a number of anomalies that negate a general definition (Dorfleitner et al., 2016). The term ‘FinTech’ has evolved and no longer only encompasses financial services in which technology is present, but now refers to an industry as well. Zavolokina, Dolata and Schwabe (2016), attribute this phenomenon to the widespread use of the term in the media, arguing that; non-academic definitions could shape research

and have thus contributed to the unresolved ambiguity of definitions and conflicting perceptions within academic literature. It is therefore prudent to observe the conceptual framework presented by Zavolokina, Dolata and Schwabe (2016) due to the dearth of scientific literature on FinTech (Puschmann, 2017).

Zavolokina, Dolata and Schwabe, analyse 38 definitions which have been randomly selected from 829 academic, business and media publications containing the term ‘FinTech’ (2016). They propose that FinTech is constituent of three dimensions: input (technology, money flow and organisation), and mechanisms (change, disruption, applied IT to finance, and competition creation) which produce an output (new processes or new products/services or new business models) (Zavolokina, Dolata & Schwabel, 2016). Therefore, based upon this framework and the ambiguity that preceded it, we have coined our own working definition of FinTech:

A combination of technology and innovative business models which change, disrupt or enhance financial services/products.

We will use the term ‘FinTech companies’ to denote any company which uses FinTech as a central element of their business practices or offerings, and ‘FinTech sector/ industry/ ecosystem’ to refer to the competitive market created by such disruptive companies. ‘FinTechs’ is used as a plural for Financial Technology in the general sense.

4.3.2. Types of FinTech

The above definition of FinTech encompasses many forms of FinTech activities which can be subdivided into: money transfers, payments, deposits/lending, capital raising, investment/wealth management and regulation technology (RegTech). Exploring the categories in relation to the Kenyan FinTech industry:

<p>Money Transfer</p> <p>Platforms/Companies:</p> <p>BitPesa, Juba Express</p>	<p>Digital money transfers which utilise internet and mobile technology. These increase ease of access and usage as well as reducing customer overheads in comparison to traditional money transfer systems. Used nationally and internationally, some build on existing technologies, while others incorporate new innovative solutions, e.g. cryptocurrencies.</p>
<p>Payments:</p> <p>M-Pesa, PesaPal</p>	<p>Integrating mobile and internet technologies for online exchanges, remittances and non-bank exchange systems which are leading Kenya towards becoming cashless (Moorgate, OPUS & BNY Mellon, 2015). This has the potential to make payments more secure, faster and easier.</p>
<p>Deposits and Lending Services:</p> <p>Branch, Tala, Mode, Umati</p>	<p>Available through FinTech innovations allowing individuals easier access to finance from peer-to-peer and private lenders. These financial technologies can reach borrowers often marginalised by traditional banks by integrating new forms of credit evaluation and new automated payment/money transfer systems.</p>
<p>Capital Raising:</p> <p>Kiva, Lelapa, GoFundMe, RocketHub</p>	<p>Online alternative funding platforms facilitate MSMEs to gain capital investments through crowd-funding, individuals and venture capitalists. Platforms limit involvement of intermediaries allowing increased transparency and communication between parties. These platforms reduce cost, increase access, increased control and diversify options for investors and fund raisers (World Economic Forum 2015, p.115).</p>

<p>Investment/Wealth Management:</p> <p>DarkMatter, Abacus</p>	<p>Integration of technology and data analytics (e.g. robo-advisors) have reduced costs and allowed a proliferation of online and mobile; open, efficient and client oriented platforms and services. Other disruptive investment management services function as enablers. Unlike traditional investment management institutions, they do not hold the capital and therefore often bypass regulations further bringing down the cost of investment. Investment tools are increasingly available to consumers with limited human intervention, but rather with model-driven and science based advice (Deloitte, 2015)</p>
<p>RegTech:</p> <p>Trulioo, Onfido, Duedil</p>	<p><i>“Technology that is providing solutions to companies across all sectors of financial activity to ensure that they are able to comply with regulatory requirements.”</i> (Larsen & Gilani 2017, p.22)</p>

4.3.3. M-Pesa - Kenyan FinTech in Action

The rise of disruptive FinTech in Kenya would not be complete without extensive reference to M-Pesa. Even at the global level, the success of M-Pesa is often employed as a ‘go to’ example when talking about disruptive innovation or ‘leapfrogging’ (Muthiora, 2015; Aron, 2015).

Powered by Telecommunications Operator (TelCo), Safaricom, M-Pesa was established in March 2007 initially as microfinance loan platform. It has since evolved into a means in which users can deposit and withdraw cash into their mobile wallets through a network of agents located ubiquitously around the country. Users can then transfer from one mobile wallet to another through even the most basic of mobile phones using an SMS text message and personal pin number. The service ‘Lipa na M-Pesa’ also allows users to pay for goods and services from businesses, whether it is in a supermarket or a hospital. Many users utilise their mobile wallets as a de facto bank account (I-Dev, 2016), and therefore M-Pesa has been credited with providing a much-needed service to the 81% percent of the population that were at the time, unbanked and excluded from the formal financial system (Alliance for Financial Inclusion, 2010). In 2007, there were only 1.5 bank branches and 1 Automated Teller Machine (ATM) per 100,000 people in Kenya (Alliance for Financial Inclusion, 2010).

The number of both M-Pesa users and agents has grown rapidly since its inception. In 2016, it was reported that 71.4 percent of Kenyans regularly use their mobile money accounts (Central Bank of Kenya & FSD Kenya, 2016), whilst the number of M-Pesa agents has grown to 130,000 (Wainana, 2015). Such is the success of M-Pesa in Kenya that it has now become a central facet of the country's economy. It processed \$24 billion in transactions in 2015, which equates to around half of Kenya's GDP (Fidelity, 2016). M-Pesa is also used by the majority of businesses in Kenya as a payment platform, and many, particularly FinTech companies integrate with the company's Application Programme Interface (API) to manage transactions (Adongo, 2015).

M-Pesa's dominance was not a smooth journey from a regulatory perspective, due to its status as a TelCo, but operations that ventured into the financial sector. Incumbent banks were concerned that the situation was unfair, as they were required to adhere to regulations that Safaricom did not. The Central Bank of Kenya, the country's predominant financial regulator also had a number of concerns, largely focussed on whether or not M-Pesa would be considered a bank, and also about the potential for fraud and money laundering. Eventually, Safaricom agreed that money deposited in M-Pesa accounts would not be used in relation to any lending or investment purposes, thus differentiating it from a traditional bank (Alliance for Financial Inclusion, 2010). In addition, Safaricom also implemented measures to adhere to Know Your Customer (KYC) requirements, which legislate that financial institutions are able to verify their customers (Makin, 2015). To achieve this, M-Pesa agents are required to verify the identity of clients through the customers' national ID cards or passports during the registration process (Safaricom, 2017)

Many accredit M-Pesa's growth in Kenya, but limited success elsewhere to Safaricom's already-established dominant market share in Kenya, which allowed the platform to scale rapidly (Llewellyn-Jones, 2016). Today, though M-Pesa remains the dominant player in the mobile transactions space, supporting 81.9 percent of all mobile payment transactions in Q2 of 2016 (Kemibaro, 2017), other competitors have entered the market in recent years, such as Equitel's EazzyPay platform.

4.3.4. FinTech as a Response to Inadequate Incumbent Institutions

FinTech firms are adapting rapidly, aggressively filling gaps in a market traditionally dominated by established financial firms (Ernst & Young, 2016). A recent survey of 16,000 customers in 32 countries showed that two-thirds of respondents are using at least one form of FinTech, and that these users are younger and tech-savvier (Capgemini, 2016). FinTech is a broad term that means different things to different consumers, and is context-dependent. As a form of disruptive technology, the identity, product

and service offerings of FinTech companies depend on the market(s) in which they are present. FinTech in developed markets for example, looks and acts different to FinTech in emerging markets, where the financial needs of users are more basic, but arguably more pronounced (Rabobank, 2005).

The prevalence of financial exclusion in emerging markets (EMs) represents an exciting opportunity for the growth of innovative solutions that overcome existing socio-economic barriers and change economic behaviour. For example, motivated by discontent with incumbents, EMs are leading the way in alternative payments, with companies like China's AliPay and Kenya's M-Pesa revolutionising the way transactions, and therefore business is conducted (Fidelity, 2016). However, PwC (2016) argue that the excitement, or fear, around the emergence of FinTech is primarily emanating from inside the industry, rather than from a consumer perspective. Therefore there is a mismatch between consumer perceptions of the potential of FinTech, and those from within the financial sector, though this will undoubtedly change in the coming years.

The rewriting of rules governing how users interact with their finances, whether it is in developed economies but much more so in emerging markets, stems from the dissatisfaction of consumers who are unable to adequately participate in the formal financial system. In countries where the majority of individuals and SMEs alike are incapable of safely purchasing insurance, obtaining credit, saving their money and making investments, they increasingly look to digital solutions from new players that are willing to meet their demands (McKinsey, 2016). Many FinTech companies emphasise their role as social actors, albeit often profit-making social actors, who are providing solutions that not just benefit the economy, but the society as a whole (Kendall, 2017). There is evidence supporting these claims, as increases in inclusive financing are linked to a boost in national-level financial stability (Morgan & Pontines, 2014), and a decrease in economic inequality (García-Herrero and Martínez Turégano, 2015). However, there are whisperings that FinTech firms may be over-stating their roles as social actors, by for example offering products and services such as loans at exorbitant interest rates that are detrimental to people's wellbeings (Louis, Weaker, Brown & McShane, 2017).

Haddad and Hornuf (2016) argue that countries with broad and inclusive financial systems generally have a smaller number of disruptive FinTech startups, which suggests that FinTech ecosystems partly develop in response to a lack of relevant and affordable financial products. Though banks in particular are well aware of the disruptive properties of FinTech, they are simultaneously aware of their inability to respond quickly, particularly with regard to innovations involving digitalisation. Figure 4 shows that

whilst 96 percent of banks surveyed by Capgemini (2016) agree that banking is evolving into a digitalised network of financial services, only 13 percent currently have the core systems to cope with this rapid transition (Figure 4):

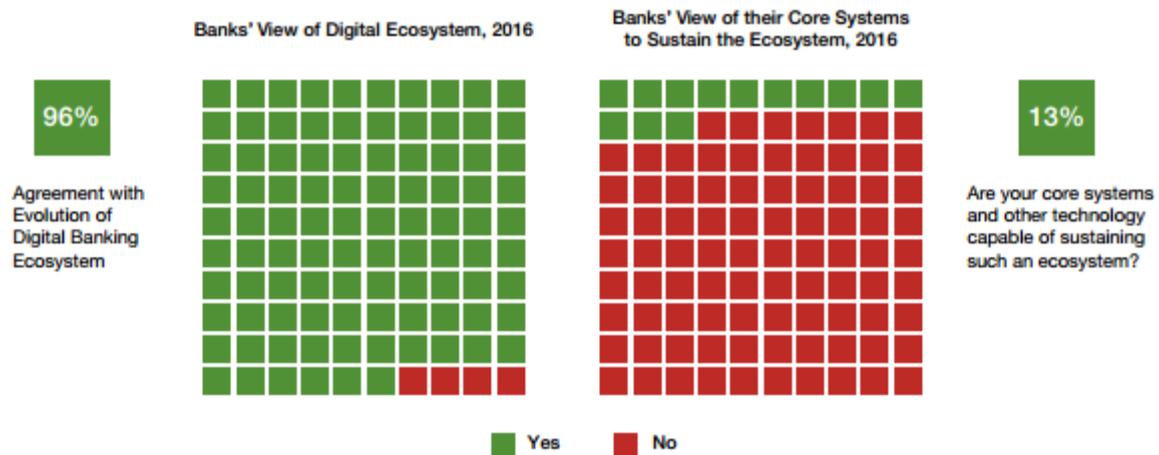


Figure 4 - How banks view the evolution of the digital banking system, and their ability to respond to this digitalisation (Capgemini, 2016)

Data from the same report shows that in response to this, 65 percent of banks see FinTech firms as partners, as opposed to 28 percent who regard them as competitors. In terms of how banks are responding strategically, banks are positioning themselves to collaborate (45.5%), invest in (43.6%) or compete by building capacities (42.6%), but it appears that they are at least sitting up and taking notice, as only 4 percent of banks are planning to do nothing (Capgemini, 2016).

4.3.5. Kenyan FinTech

A Deloitte study into global FinTech hubs, aggregating a number of business indices for each, such as the area’s innovation culture, before synthesising a score, included Nairobi in its list of global FinTech hubs. Though scoring poorly relative to hubs in the Global North, it was one of only three cities included from Africa, the other two being Johannesburg and Lagos (Deloitte, 2017). The report cites the influx of development money due to the location of the UN’s headquarters, its stable socio-political context and an increasing amount of technical talent as reasons for Kenya’s FinTech growth. In addition, the much maligned process of brain drain is beginning to reverse in recent years, as many of the African diaspora, equipped the businesses with experience and technical skills acquired from working or studying abroad, begin to return home (I-Dev, 2016). Alongside this, the once barren investment landscape for African startups is beginning to improve, though thus far the majority is focussed on sectors such as energy and agriculture, and less so for technology and finance (I-Dev, 2016). Challenges

remain around further growing an efficient investment ecosystem (complete with exit routes), and acquiring skilled employees, particularly management and software engineering talent (I-Dev, 2016).

4.3.6. Disruptive Innovation & Leapfrogging

Within this section, disruptive innovation and ‘leapfrogging’ will be addressed in relation to the formation of a disruptive FinTech sector. Bower and Christensen argue that a prominent trend in business is the inability of incumbents to stay ahead when markets or technologies change (1995). For the purposes of this paper, we will refer to traditional financial institutions, (banks, insurers, investment management services etc.) as the incumbents being disrupted.

Disruptive innovations “originate in low-end or new-market footholds” (Christensen, Reynor & McDonald, 2015). These footholds can develop when leading companies stay too close to their high profit existing customers and neglect innovations (or are blindsided by innovations) that fit *some* customer needs better (Bower & Christensen, 1995; Day & Schoemaker, 2005). According to Christensen, ‘disruption’ denotes a process by which a company with less resources can successfully challenge incumbent businesses (2015). Research into the disruption of traditional financial services attributes the failure of their adaptability to the prevalence of antiquated legacy systems and cultures (Capgemini, 2017; Lipton, Shrier & Pentlan, 2016; Skan, Dickerson & Masood, 2015). Puschmann (2017), uses Foster’s (1986) differentiation between incremental and disruptive innovations to exemplify FinTechs’ capacity to disrupt incumbent financial institutions. An example of incremental disruption is the streamlining of the payment process by allowing a user to send a photo of their payslip to a bank rather than inputting the data manually. He then discusses a disruptive innovation which could use Blockchain technology to fundamentally transform the payments value chain negating the need for banks (Puschmann, 2017, pp.74).

While many industries have revolutionised their business models over the last thirty or so years, banks have ignored the rising tide, living on past glories and retaining their core models (Lipton, Shrier & Pentlan, 2016). Therefore, banks and other incumbent financial services can be regarded as at a crossroads, either they will be disrupted by the digital innovations, or, they can harness the technology themselves (through investing in R&D or through partnerships) creating better services for their clients (Skan, Dickerson & Masood, 2015).

Many disruptive innovations allow users to ‘leapfrog’ existing technologies or practices and utilise cutting-edge approaches, or in other words *improve a position by going past others quickly or by missing some stages of an activity or process* (Cambridge Business English Dictionary, 2017). In developed economies, incremental technological advancements are the norm, however, in emerging economies outdated technologies are often more prevalent (Davison et al, 2000). Therefore, developed countries have the potential to impact upon the progress of emerging economies’ technologies thus increasing the likelihood of leapfrogging, a process which has been sped-up by globalisation (Davison et al, 2000). Wijkman and Afifi (2002) present the argument for emerging economies to embrace new technologies, suggesting that through leapfrogging, developing countries can circumvent stages of development, specifically the social, environmental and financial stages. An example they highlight is the declining price of ICT, which can result in the price of investments in infrastructures such as telecommunication reducing year on year (Wijkman & Afifi, 2002). However, Fu et al. (2011) argue that international technology diffusions are only successful when coupled with localised innovation efforts.

The mobile money platform M-Pesa was specifically designed for the Kenyan market and although it relied on the advancement of mobile penetration, the service was not appropriated from a different (developed) market. Kenya’s advanced mobile phone ecosystem has facilitated much of the ‘leapfrogging’ within the finance sector (Muthiora, 2015). Aron (2017), outlines the impact of mobile money platforms such as M-Pesa, arguing that the technology implemented has leapfrogged many formal banking services. This in turn has overcome barriers, such as the high cost of traditional banking (Aron, 2017). The widespread usage of mobile phones and high internet penetration has allowed services and products to be developed in Kenya that are keenly romanticised within the context of leapfrogging. However, Alzouma (2005), warns against over exaggerating the benefits of such leapfrogging, arguing that “those who are poor and illiterate remain so. ICTs cannot leapfrog beyond the ordinary development problems Africans are faced with”. Therefore, as we accept the theory of leapfrogging, we should also make an effort to evaluate the merits of each case before suggesting that it solves all problems.

5. Methodology

In terms of the research design, a mixed-methods approach consisting of a number of semi-structured interviews, informal interviews, and policy analyses was adopted, as it is argued that employing a mixture of methods when studying complex issues allows researchers to uncover richer data (De Lisle, 2011). In total, we conducted 21 semi-structured interviews. One with the Central Bank of Kenya (the government's national bank); one with Equity Bank - which is one of the country's largest private banks; one with Safaricom, the country's largest telecommunications company; one with a venture capital firm; one with a private investor; one with an innovation hub; and fourteen with various FinTech companies.

5.1. Research Preparation

Preliminary research into the FinTech sectors of emerging market economies reiterated Nairobi's reputation as a forerunner of FinTech innovation. The decision was therefore made to limit the research geographically to Nairobi in order to refine the scope of our study. In total, one month was spent in the city and through conducting our empirical research on the ground, we were able to comprehensively submerge ourselves into the FinTech sector ecosystem. By being there in person, we could apply different research methods to fully engage with, and understand the specific processes and realities that exist. Although conducting the research remotely would have permitted us to cover some of the themes, we would not have been able to investigate the context and environment in which our research questions are embedded as accurately as by being there in person. We view that empirical participant observations as well as door-stepping and networking have been integral to our research and these would not have been possible had we not physically based ourselves in Nairobi.

Interviews were obtained through a variety of methods. Firstly, before the fieldwork took place, a long-list of companies that matched the study purpose was compiled through information gleaned from a variety of sources, mostly: websites (such as 'Disrupt Africa', 'TechCrunch' and 'PYMNTS'), academic literature and private-sector reports. The relevant people were identified in each company, usually the CEO or head of innovation, depending on the size of the company, before a tailored email was sent to them. Much of the emailing took place before the fieldwork, though it continued during the first fortnight we were in Kenya, so that enough interviews were secured. We also 'door-stepped' a small number of companies by walking to their office, explaining our thesis topic and rationale, and politely requesting to speak to somebody relevant. Though some commentators have expressed concern

about the quality of data generated from impromptu interviews (Remenyi, 2012), we believe that it is often a more effective way of making contacts, particularly in this context, and that respondents were very willing to speak to us once they had met us.

During the majority of the interviews we conducted, we asked the interviewees if they could recommend an additional person or company to speak to, and also for an introduction from them, as the recommended person would be more likely to accept our request if it came through a trusted friend or associate. Using referrals to reach more contacts, also known as ‘snowballing’, is useful for employing the knowledge of industry insiders. Snowballing was an appropriate research tool to utilise in this context because we were not seeking a random sample of participants, and it also allowed us to contact harder-to-reach interviewees (Atkinson & Flint, 2001).

5.2. Conducting Interviews

An interview guide was drafted beforehand, with questions separated into thematic areas (see appendix, section 10.2.). The interviews would begin in a more conversational tone, with open questions, usually about the interviewee’s professional background, and some information on the company. This allowed for an open conversation and a relaxed atmosphere. Later on in the interview, we would steer the conversation towards more specific themes, such as barriers to growth, doing so by asking more direct and focussed questions. This method provided the respondents with a platform from which they could share their insights and perspectives (Flick, 2007). Informal interviews were conducted through a similar structure, and usually took place at the innovation hubs/startup incubators.

We made sure that we were time-flexible and willing to accommodate last minute changes of plan, and therefore scheduled the interviews at a time and place of the interviewees’ convenience (Chacko, 2004). Interviews would therefore usually take place in the interviewees’ offices, partly so that we could fit into the interviewees’ usually busy schedules, and partly because by being on their ‘territory’, the respondents were more at ease, which facilitated a smoother dialogue (Valentine, 2005). Interviews typically lasted around 30 minutes, to ensure that we did not take up too much of the respondents’ time, though a small number lasted between 45 and 60 minutes if a respondent was willing and the conversation was particularly fruitful.

An analysis of the relevant policies was also undertaken to supplement the data generated by the interviews. Like M-Pesa’s well-documented legal battle with authorities beforehand, many of the FinTech companies spoke about how they were navigating within or around legislation. With this in

mind, a systematic analysis of Kenyan government legislation and policies related to the rules governing financial institutions was essential. Initiated both online, and in person at the Central Bank of Kenya's library, the analysis of policy was undertaken while the interviews were taking place so that we could embed and contextualise the lived and tangible experiences of the companies we spoke to, into our evaluation of the policies and their effects (Ritchie & Spencer, 2002).

5.3. Coding

We first transcribed the interviews before uploading them all onto Google Docs, an online platform for sharing and storing files, in a separate folder for coding. In line with the existing academic literature and also the research questions we wanted to answer, we developed a number of hard themes that were tailored to the thesis (Weber, 1990). The themes were developed and refined through extensive discussion, from which some themes were added or removed completely. This was further amended while the coding itself was underway, and we would add codes if we realised any previously unconsidered trends were emerging. To code, one of us started with the first interview alphabetically, and the other from the last, copying and pasting relevant parts of each interview into a separate document that corresponded with the particular theme identified. After the halfway point, when one of us was analysing an interview that had already been coded by the other, there was discussion about any sticking points or confusion until a consensus had been reached and all interviews had been re-examined by the other. We worked this way to ensure reliability, stability and agreement for the analysis section (Campbell, Quincey, Osseman & Pedersen, 2013).

5.4. Ethical Consideration for Recording Interviews

Prior to our first interview, we devised a formal script which we verbally presented to our respondents before starting each interview (see appendix, section 10.3.). To facilitate informed consent, we made it clear to the respondent(s) how we intended to use the data and for what purpose (Cooper & Schindler, 2014). We then asked for permission to record the interview using a voice recorder from which we would transcribe the interview later. We stated that any data we intended to use would be relayed to them within the context of our research paper for their approval before submission. It was at this point that we asked if the respondent wish to remain anonymous or if they were willing to be named within our study, they were also informed that they could change their mind on this issue at any point (Cooper & Schindler, 2014). We relayed the same information again at the end of the interview allowing the

respondent to reflect on the interview and make a second informed decision about their anonymity. Finally, we gave them a third opportunity to remove their data or remain anonymous when we emailed them a copy of the thesis with relevant data highlighted.

Through a formal presentation of our purpose, we were able to negate any complications around anonymity and hesitancy to answer tricky questions throughout the interview, as the respondent knew they had the choice to have any data excluded from the final report. Although some of our respondents have chosen to remain anonymous, none forbade the inclusion of any data. Some of the respondents who wished to remain anonymous did not allow us to use the voice recorder during the interviews, however they were happy for us to take notes so long as these were supplied to them before the final submission of the research paper. All of our interviews were conducted based on mutual respect and openness, and although some of our questions put the respondent into a potentially uncomfortable position, they were aware of the safeguards against their anonymity and that the questions were purely for research purposes (DiCicco-Bloom & Crabtree, 2006).

5.5. Methodological Limitations

Temporal limitations impacted upon our research, as time-constraints only permitted us to take a ‘snapshot’ of the FinTech sector in Nairobi at a specific time. Although we are confident in our conclusions, we do not wish to hide the fact that our data would be more comprehensive had we been able to garner more insights over a longer research period. For example, it would have been useful to conduct follow up interviews and investigations into the day-to-day realities of startups and incumbents through shadowing them and making further empirical observations. Time constraints also impacted on our ability to delve as deeply as we would have liked into the specifics of regulations and policies implemented by the Kenyan authorities and Central Bank, meaning that we sometimes relied upon secondary sources for the analysis of regulations and policies.

Finally, the questions we asked during the interviews often touched upon sensitive information and as a result, we had to discern between genuine responses and well thought out PR ‘scripts’. Although this was initially seen as a problem in gaining reliable data, as we interviewed more people, the ‘scripted’ answers became more obvious, and even useful to our research.

6. Data Analysis

6.1. What are/were the driving forces behind the growth of FinTech in Nairobi?

Whereas Nairobi's FinTech space was nascent only ten years ago, it has rapidly established itself globally as the most renowned FinTech hub in Africa (Deloitte, 2017). This section will explore the reasons underlying the development of Nairobi's FinTech sector, touching upon factors such as the inadequacy or exclusionary nature of the financial products and services offered by incumbent financial institutions. Also discussed is the relaxed regulatory environment; the pioneering influence of a hugely successfully disruptive FinTech innovation, M-Pesa; the political and business stability of Kenya; and finally the entrepreneurial nature of Kenyans and the service economy which they inhabit.

6.1.1. Inadequate Incumbent Financial Institutions

“Banks were making huge profits from let's say 20% of the population, so they had no real need to diversify and look down the pyramid. Then these FinTechs emerged hoping to spread financial inclusion to SMEs and individuals.” – Anonymous Interviewee

In exploring the factors underlying the evolution of the FinTech space in Nairobi, it makes sense to start with the financial conditions that were in place before M-Pesa's growth, and how this created the demand for disruptive innovations. Exclusion from the formal financial sector was prevalent in Kenya prior to M-Pesa. To revert back to the definition of financial inclusion outlined in the literature review, inclusive financing is characterised by offering access to financial services that are useable and relevant to the customer's needs and are of high-enough quality to be beneficial to them (African Development Bank, 2013). For poorer sections of society especially, operating through the formal sector was simply not a plausible option. However, a FinTech innovation, created by a TelCo, posed a solution:

“Having a TelCo come in and create a mobile payment solution that the traditional banking sector had not, and with M-Pesa being so prevalent here in Kenya, it showed that the banking sector has many challenges when it comes to access to finance...When others saw the example of M-Pesa, it provided the impetus for them.” - Interview with Umati

In Kenya, even owning a bank account was and (remains) expensive, with the fees excluding many users from low-income cohorts (FSD Kenya, 2007). Even though there was a huge proportion of the population who were un(der)served, notably its rapidly expanding middle-class, banks were content with competing for the same, wealthy customer segment (interview with Equity Bank). Only two incumbent banks, Equity Bank and Kenya Commercial Bank, targeted their operations ‘down market’ (Ravi & Tyler, 2012).

When asked why this was the case, the interviewees offered many reasons, describing banks as ‘*sleeping giants*’ (interview with Tala) who were ‘*slow-moving and risk-averse*’ (Kiva), ‘*overly focussed on large corporates*’ (Innova) and therefore had no ‘*incentive to innovate*’ (Caytree). They viewed poorer customers as riskier to manage and therefore unprofitable (Kiva). We were also informed that banks were prioritising the higher returns offered from Nairobi’s real-estate boom, (interview with Caytree and Abacus), wherein prices grew by 500 percent between 2007 and 2014 (Oxford Business Group, 2016), rather than in extending credit and financial services to the financially excluded. Crucially, banks were not willing to help fill a gap demanded by the market:

‘To Transfer money from my account to your account was really expensive before. I had to go to my physical bank located something like ten kilometres away. It’s worse in the village where they don’t have vehicles. They have to walk or use animals, all the way to the bank to transfer the equivalent of \$100 from my account to yours and that was the way it happened for a very long time.’ - Interview with Innova

Kenyans took to M-Pesa rapidly, not just due to its financial benefits, but also due to the impact that it had on people’s day-to-day lives. The phenomenon of rural to urban migration in Kenya, particularly for young people, is similar to that in many other emerging markets (Saunders, 2010). Residents of Kenya’s urban areas often send money back to their friends and family in the village (The Economist, 2015). Prior to M-Pesa, this was hard enough even for those who held bank accounts, as transfer costs were high, and brick-and-mortar bank branches often far away. However, with the majority of the country being unbanked and excluded, money would have to be sent physically, either in person, or trusted to a Matatu (public minibus) driver or friend who was making the required journey (Kabbucho, Sander & Mukwana, 2003).

Many of our interviewees recall having to undergo this process themselves, pointing out that it was expensive, time-consuming and risky. With M-Pesa, money could be sent reliably and importantly, instantly. Speeding up the process gives both the sender and receiver of the money more time to invest in other activities. Though banks may blame M-Pesa’s rise on what they perceive to be an unfair regulatory playing field, the reality is that they were unwilling and/or unable to take the risk of moving

down the pyramid themselves, and serving customers whose demand for financial products was extremely strong. FinTech companies on the other hand were far quicker to adapt traditional models, and embrace digital technology to suit the needs of their clientele.

'15 years ago it was only banks in the finance space, and they were all scrambling for the same high-end customers...FinTech companies are changing traditional models to fit a different space. It is a high-effort, high-risk, high-reward strategy' – Interview with Equity Bank

Disruptive FinTech companies are willing to step into spaces that have as of yet been untapped. They are willing to forego high profit margins, instead focusing on the potential for scale offered at the bottom of the pyramid (Christensen, Raynor & McDonald, 2015). As Africa's economy grows, and Kenya is no exception, more companies are looking towards these customers as increasingly viable consumers of their products and services (Deloitte, 2012).

6.1.2. Paving the Way: The importance of M-Pesa as a Successful Disruptive FinTech Innovation

'The whole effort happened around the mid to late 2000s, M-Pesa and Safaricom really figured out how to take standard financial services/products and miniaturize them for our economy.' – Interview with Safaricom

Launched in 2007, Safaricom's mobile money platform is now arguably the biggest player within the Kenyan financial sector as a whole. In 2015, \$28 billion was transacted across the platform, which equated to approximately 44 percent of Kenya's GDP (Masinde, 2016). From a regulatory perspective, developments were far from instantaneous. Many formal financial institutions who themselves were regulated by the Kenyan authorities were unhappy that a new player could enter into a domain that was traditionally reserved for banks:

'When M-Pesa started, there was a huge cry from the banks that these guys are acting like a bank and therefore should be regulated like a bank. But the regulators eventually said no to that' – Anonymous Interviewee

Following lengthy regulatory discussions between Safaricom and the Central Bank of Kenya (CBK), in which M-Pesa was even shut down for a short time, Safaricom and the CBK eventually came to an agreement. Safaricom agreed that users and agents signing up to the M-Pesa service would have to

undergo sufficient Know Your Customer (KYC) measures, and also that no deposits would be held by the company, thus differentiating their operations from a traditional bank.

However, this is not to say that users did not use M-Pesa in a manner similar to the way they would a bank account. Whilst users could deposit money into their mobile wallet through an agent, and transfer this money by an SMS text message to another user's mobile wallet, M-Pesa has other functions. Customers would store money in their M-Pesa mobile wallets, with these wallets acting as a de facto bank account. This is especially pertinent because at the time of M-Pesa's inception, only 15 percent of Kenyan adults held a bank account with a formal financial institution (FSD Kenya, 2016). Many of these users, both individuals and businesses regarded their M-Pesa mobile wallet as being safer and more convenient than storing their reserves in cash (Hermon-Duc, 2012). One interviewee emphasised M-Pesa's importance to business' functionality:

'Cash is still top, but nobody is desperate if they haven't got cash. Many days people have no cash on hand. [M-Pesa has] created ecosystems. If you are a business entity and don't accept M-Pesa, you've locked yourself out.' – Interview with Tala

Later, other FinTech products would follow on from M-Pesa's successes, for example, the Commercial Bank of Africa's M-Shwari offering, launched in 2012, and also rival KCB-M-Pesa, which was launched soon after. These products allowed users to deposit money, accrue interest on this money, and also take loans through their phones. All of these products and services would have been unthinkable to both users and banks only a few years earlier, emphasising the unexpectedness of their rapid success, and the severity of their disruption to the formal financial sector (Tenemos, 2013).

But why did M-Pesa grow in Kenya and not in other countries with similar conditions of demand? The general consensus among our respondents was that the dominance of Safaricom, coupled with the falling prices of mobile phones, created an environment in which people were very receptive to new ideas:

'The existence of Safaricom, having one platform that you can rely on has helped. None of the other countries had as dominant a mobile player as Safaricom.' - Interview with Kiva

'People felt Safaricom belonged to them. M-Pesa is a Kenyan product, it is engaging us, we want to support it. There's that patriotism there, a feel good factor.' - Interview with Innova

‘Look at Kenya when it comes to mobile, we are early adopters of mobile money...as smartphones are becoming cheaper, people are embracing them too.’ – Interview with Tala

There were also a number of comments made about how banks in nearby countries had witnessed M-Pesa’s rapid ascent and disruption of the banking sector in Kenya, and could better prepare and lobby for regulations preventing similar innovations from being established in their respective countries.

From the supply side, M-Pesa offered users a service which for the unbanked was previously unprecedented in Kenya. There were also convenience benefits for those who were banked, as transaction times were drastically reduced and users did not have to visit a physical bank branch. Many of our interviewees testified that M-Pesa’s success and reliability, along with the early adoption mindset of Kenyans, has paved the way for other FinTechs, especially those that embrace and utilise mobile technology. Kenyans who have had positive experiences with M-Pesa are more open to trying other financial tools and technologies, whether it is a way to manage one’s finances or borrow money. M-Pesa has disrupted, and it is also paving the way for others to disrupt further.

6.1.3. The Business Context

The Kenyan ‘Side Hustle’

Relative to many of the other developing countries in the region, Kenya’s economy is fairly diversified, with a strong service sector that contributes almost two-thirds of its GDP (African Development Bank, 2014). A number of our interviewees spoke, albeit anecdotally, of there being a ‘side-hustle’ culture prevalent in Kenya, in which people, no matter at what position they inhabit on the economic spectrum, are always looking for additional ways to supplement their income:

‘The Kenyan population is very entrepreneurial. Those of us who are working also have side businesses as well....We are not a very resource-based economy like countries with oil. So an economy that is service based creates that nature of making money from every opportunity you get.’ – Interview with Branch

This is partly driven by necessity, due to the country’s high unemployment rate, particularly among young people, which stands at 22.2 percent (World Bank, 2016). In addition, though its economy is

growing rapidly, the majority of working age adults work in the informal sector and are self-employed. Starting one's own business is therefore a fairly common practice, as one respondent explained:

'Our unemployment rate is very high. My regular driver has a biochemistry degree. He has a hustler mentality. No job? Start your own business. Kenyans are always doing something on the side.' – Interview with Safaricom

Investment and Support

Dozens of FinTech companies have sprung up in Nairobi over the past few years, from companies offering MSMEs the ability to borrow small sums through their mobile phones in a matter of seconds, to others that facilitate digital payments, or others which allow smallholder farmers to purchase insurance for their crops. Nairobi is proving to be a regional launch-pad for entrepreneurs with disruptive FinTech ambitions, in part due to the support that a business can receive in its early stages. In recent years, there has been a growth of innovation/ accelerator hubs and startup incubators, which are helping some FinTech companies to both launch and scale. Incubators such as iHub, the Nairobi Garage, m:lab and Nailab offer low-rent, fully-serviced collaborative working spaces for startups in which companies can share and refine their ideas and expertise. International technology conglomerates are also showing interest, with Facebook and Google recently sponsoring FinTech events in Nairobi. One interviewee underlined the importance of these hubs for stimulating startup growth:

'You have all the conditions for Nairobi to become a FinTech hub. All the infrastructure you need for innovation is more or less in place...These tech hubs can increase their impact because they can build on this great platform' - Interview with Caytree

The increase in innovation hubs has coincided with a maturation of the investment landscape, both domestically and internationally. Within Africa, investments relating to inclusive financing attracted more than 56 percent of the total investments made by venture capitalists in 2016, where Kenya was third out of the big three investment receiving countries, with first and second being Nigeria and South Africa respectively (Collon, 2017). It can be argued that these hubs support nascent businesses in becoming investment ready, and subsequently help channel investment into these companies (Bruneel, Ratinho, Clarysse & Groen, 2012). When asked about his reasons behind wanting to invest in Kenyan FinTech, an angel investor we interviewed informed us that he was excited by the possibilities of the sector, not just for its potential return on investment (ROI), but also due to its social properties, i.e. how

it can contribute to financial inclusion. However, it remains risky, and the barriers facing Kenyan FinTech companies from growing and succeeding will be outlined in greater detail in Section 5.2.

Doing Business

Another factor cited by interviewees as a reason for Nairobi's growth as a FinTech hub, is due to Kenya's geopolitical stability and comparatively open business environment relative to many of its neighbours. Interviewees mentioned the relative difficulty in doing business in neighbouring Tanzania and Ethiopia, where everything from starting a business, obtaining work visas for international staff, or even moving money into or out of the country is tightly controlled. Kenya, has actively tried to be the antithesis of this, demonstrated by the presence of numerous international development and private-sector actors who have chosen to locate their headquarters in the city. As part of their *Vision 2030* plan, the Kenyan government aims to transform Nairobi into an 'international finance centre', wherein the strategy is to:

'accelerate economic growth by encouraging Foreign Direct Investment, safeguarding the economy from external shocks, and establishing Kenya as a leading financial centre in Eastern and Southern Africa.' – Kenya Vision 2030

A further facet of the economic aspect of the vision aims to deepen capital markets by demutualizing the Nairobi stock exchange and reform capital and bond markets. Alongside this, a number of incentivisation policies have been implemented by the Kenyan government in recent years in order to attract business. For example, the Business Regulatory Reform Unit, an arm of the ministry of finance tasked with simplifying business licensing, has removed 315 of the 1325 licenses completely, and simplified a further 379 (Muganga, 2010). For the FinTech sector, these policies appear to be beneficial. Not one FinTech company complained that it was difficult to start or conduct business in Kenya, however, some did cite corruption as a difficulty (other barriers will be discussed in the section 5.2). With that being said, these developments have all taken place relatively recently:

'In the 1990's you basically had a political system that was pretty stable, but not much happening economically. Kenya was sort of petering along. Then in 2002 there came a new president [Mwai Kibaki], who started the ball rolling with some of the reforms we know today.' - Interview with Caytree

In 2002, Daniel Arap Moi, whose 24 years in power was partly characterised by human rights abuses (Adar & Munyae, 2001) and economic stagnation (Lower, 2012), was succeeded by Mwai Kibaki. Kibaki stood for two five-year terms before being succeeded democratically by Uhuru Kenyatta in 2013. Neighbours Somalia and South Sudan are both considered conflict affected countries. Only neighbours Uganda and Tanzania, and nearby Rwanda offer levels of political stability and governance comparative to those in Kenya (Mo Ibrahim Foundation, 2016). This is important because it is not just the economic environment that dictates a company's choice about where to situate and operate; the geopolitical context also plays a part (Bremmer, 2005). Since 2002, the Kenyan economy has grown at a fairly consistent pace, and liberalising economic reforms have been implemented in order to attract business. Despite this, a number of interviewees, both informally and on the record, expressed concerns that the forthcoming August 2017 general election has the potential to destabilise recent economic successes.

Digital Infrastructure

Another reason behind the growth and adoption of FinTech is that Kenyans are supposedly 'tech-savvy', and the digital infrastructure in place encourages them to become so (interview with Kiva). As previously outlined, there is an advanced technological, internet and telecommunications infrastructure already in place across the country. These factors combine to create an advantageous environment for FinTech companies to thrive. Many of the interviewees at FinTech companies emphasised the importance to their business that consumers own smartphones:

'Kenya's internet penetration is among the best in Africa and that has helped a lot...What that means is that we have guys with access to 3G in far flung counties who can access the internet on their phones very easily. There is also a very solid basic understanding of how mobile phones work and that even includes the very old or guys that probably didn't go to school' – Interview with Branch

Many of the companies we spoke to are completely mobile app-based, and therefore, those with feature phones simply cannot access the product. Regardless, the falling price of mobile technology, and the quickening speeds of the internet have been beneficial for FinTech. For example, Tala, a microloan company we spoke to uses the data from 10,000 variables collected through each user's smartphones to digitally calculate the likelihood of successful loan repayments. Disruptive FinTech in Kenya, it seems, is intrinsically linked to the smartphone and looks set to continue in this manner.

Regulatory Conditions

The term 'regulation' or associated forms appears 170 times within the 21 interviews.

The main regulatory body concerning our research is the Central Bank of Kenya (CBK) as they are responsible for formulating and implementing monetary policy. The policies, or lack thereof which the CBK implemented were a constant source of contention as each interviewee held a different opinion and was affected in different ways by regulations. By their own admission, the CBK lacks capacity to research and proactively form policies at a speed that will keep up with FinTech innovations. However, they view that as soon as a FinTech company starts to take a sizable market share, they will no longer be able to fly under the radar and the CBK will evaluate the company's practices. They made it clear during our interview and in their office policy statement that:

'The CBK will continue to support development of new products and innovations towards enhancing financial access in order to encourage economic growth. Appropriate legislation and regulations will be proposed to ensure that such innovations are operationalized accordingly so as to enhance market confidence. The Bank will monitor any new financial derivatives and /or innovations in the market that could have adverse effects on market stability. The CBK will work closely with the other stakeholders to improve the monetary policy transmission to lending rates, and promote transparency in credit pricing.' - Monetary Policy Statement, 2016 pp.16

This was supported by the FinTech companies we interviewed. There were no indications from any party suggesting that the CBK were purposefully being constrictive to FinTech without due cause.

BitPesa, a company which utilises blockchain technology, argued: *'the issue is that most regulators do not understand the new product and innovation'* and therefore impose restrictions (interview with BitPesa). However, they also mentioned that the CBK is now seeking advice from external companies about how to legislate around new FinTech. The private investment firm that we spoke to held the opposing view, suggesting that the regulatory bodies had created an environment that was conducive to the growth of FinTech due to their in-depth understanding of the technologies through appointments to their advisory boards (interview with venture capitalist company). Other companies supposed a laissez-faire stance, suggesting that regulatory conditions had liberalised the market, and that the regulators simply allow FinTech innovations (Caytree, Kiva and Innova).

"FinTechs operate in a totally different environment. Right now we have interest rate caps that govern the financial institutions but really restrict the kind of risk they are willing to take, or

the kind of people that they are willing to lend to. FinTechs on the other hand can kind of do anything. They are free to innovate, they do not need to seek approval to launch a product in the market. Financial institutions have to do so.” - Interview with Innova

Based on the interviews these policies have generally contributed to an environment conducive to the proliferation of FinTech. The majority of FinTech companies we spoke with had engaged in some form of conversation with the relevant regulatory bodies and therefore felt as though their business models were not under threat from changes in regulation. This shows the level of engagement from the CBK in developing the FinTech sector in Nairobi and creating a regulatory framework alongside the FinTechs.

6.2. Barriers to Further Growth

Whilst Nairobi’s burgeoning FinTech ecosystem is attracting global recognition, there remain a multitude of barriers preventing the FinTech companies that inhabit it from growing. These include: insufficient access to data and information on consumers; regulatory challenges; a lack of credit and investment; shortages of talent, both in terms of managerial capacity and also software-development; and the size and maturity of the Kenyan market. This section delves into these issues in greater detail, based on the insights from various respondents.

6.2.1. Regulatory Issues

Although the regulatory conditions have allowed FinTech companies niches in which they can operate, these companies are not blind to the possibility that new regulations could be brought in that would threaten their business models. Three companies we interviewed had encountered major regulatory obstacles. The general consensus is that regulators act too slowly and do not always understand the technologies or business models of disruptive FinTech companies (interviews with BitPesa, Branch, Umati, Tala, iHub and CBK). Lelapa Fund, who operate a crowdfunding platform often pondered among themselves: *‘do you work around the existing framework, or do you try to move the existing framework around?’* (interview with Lelapa). This was in response to the issues the French regulatory bodies took up with their business model. The trend for most FinTech startups in Kenya is to form a business, grow within the existing regulatory framework and then get to the point where they are evaluated by regulators (interviews with CBK and Lelapa). This worked in Safaricom’s favour during

their dispute with the CBK over M-Pesa, however they should be seen as an anomalous case due to the huge customer base they had accumulated before the regulatory review (interview with Safaricom). As mentioned in the previous section on regulation, many of the FinTech companies are in continuous conversation with the regulatory bodies to prevent unforeseen regulatory constrictions being imposed upon their businesses.

An example of a regulatory constriction is the recently implemented cap on interest rates (August 2016), which limits regulated lenders' to a maximum of 4 percent above the central bank's benchmark rate, which currently stands at 10 percent. The 14 percent cap on lending has been a recurring issue that permeated many interviews. Numerous FinTechs see the impact it has upon banks and therefore the potential impact it could have on them if they were to operate within the formalised lending space. Although Tala were confident that their alternative data collection would still provide them with profitable margins, they did state that if they were regulated they would need to restructure their risk analysis and lending policies. Other companies were concerned that if they were regulated with the same cap on lending as banks, then their models would suffer because they would not be able to target the high risk customers that are lower down the pyramid. There are no guarantees in place that will protect the FinTech firms from such regulation being put in place, and therefore there this an added risk when operating in Kenya as a FinTech enterprise.

One of the other regulatory impacts for the MFIs and mobile lenders is that there is no mandate for them to supply their credit data to the Credit Bureau, which ultimately adds to the risk of lending. Due to the limited amount of extractable data from the Credit Bureau, risk is largely based on a proprietary dataset (interview with Caytree). Another aspect of this is that it makes it harder for FinTech startups to evaluate the market. This relates to a further issue listed below: the accessibility of data (section 5.2.2).

6.2.2. Access to Data and Information

“One thing in terms of data, is that it is very difficult to get, first of all because it is not there, or because it is stored in formats which are just very old and archaic. Trying to convert them into a good electronic form is very difficult.” - Interview with Innova

The limited access to financial records and data in Kenya has provided both obstacles and opportunities for FinTech companies. In terms of opportunities, because data *‘is very scattered in Kenya’* (interview with Tala), it has allowed FinTechs to build business models based upon collecting data through alternative methods. Through these methods, specific FinTech companies have been able to target

customers often marginalised by traditional financial institutions and serve a greater number of people, especially in terms of offering credit. However, no company we spoke to disputed the proposition that they would be able to serve their customers better if they had a more comprehensive data set. One company noted:

“The biggest barrier is data. If you have a situation where banks open up an API where you could pull in all the data, and data from M-Pesa too, I think that would dramatically change the face of FinTech in Kenya and really accelerate capital” - Interview with Caytree.

The lack of data impacts directly on the planning and scaling/ growth capacity of FinTech startups and can be a barrier in the decision to enter the market. It also has an impact on the FinTech companies' ability to attract capital, especially from international investments.

6.2.3. Access to Investment and Credit

Alongside the lack of available data, our respondents cited several factors which impact their ability to attract investment and access capital. Many of the companies we interviewed did not have a problem with gaining initial investments, as *‘FinTechs now only need \$5-10,000 to start’* (interview with MODE). The big concern was in attracting working capital to scale the business. One of the main problems in attracting investment from banks or other sources is the perceived risk factor. Not only is there the inherent risk in supplying working capital, but:

‘the value of FinTech in Africa is skewed because it is an emerging market with no physical assets to offer, if a company goes bust, there is no collateral unlike investments in other industries.’ - Interview with MODE

Abacus, the investment software company we interviewed suggested that one reason capital is expensive and hard to come by is because FinTechs are *‘competing with real-estate which is turning around 25-35% year on year’* (interview with Abacus). The rapid growth in house price in Nairobi is exemplified in figure 5 below:

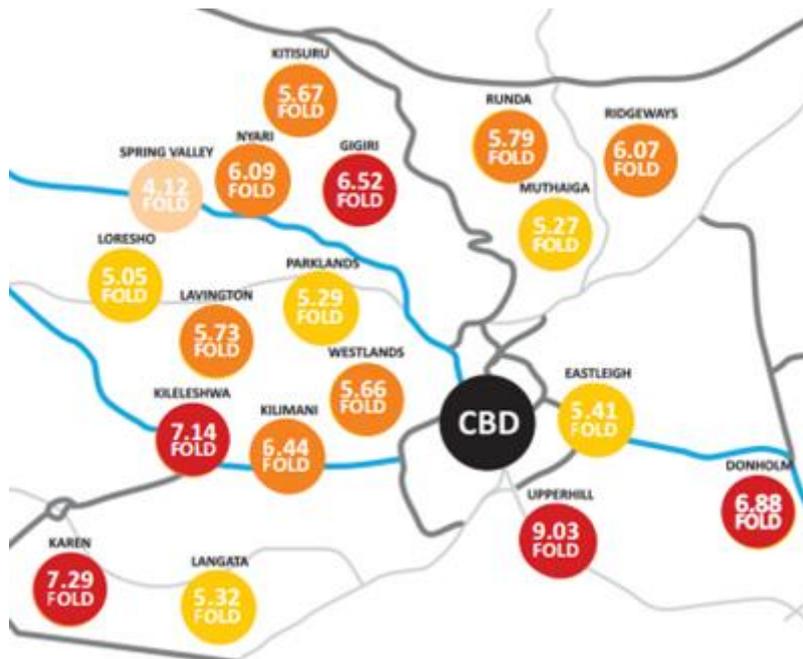


Figure 5 - Nairobi-18 Suburbs Change in Prices Since 2007 (HassConsult, 2017).

The recent 14 percent cap on banks' lending has further impeded FinTech companies' ability to attract capital as banks have become even more risk averse, or as one respondent suggested: *'It has frozen the credit market'* (interview with Branch). Other companies concurred:

'What [the cap] has effectively done is reduce the amount of loans given out to small businesses... Banks are in quite a competitive environment. There are 40+ banks and they are all serving the main customer segment, which is the large corporates, or businesses close to them. Because these are the least risky.' - Interview with Umati

'Banks are not lending to SMEs. They would rather lend or invest in Treasury Bills because they are sure the government will pay them. It is risk free. With an SME, [banks] don't know where it will end up.' – Anonymous Interviewee

In contrast, the CEO of MODE believes that this should not impact the FinTechs as the investment expectations upon banks from FinTech startups are ill-conceived. He fervently expressed that banks should not be seen as angel investors because they are not, and that is not their job. The CBK believed that if the FinTechs had problems in attracting capital, it was because they were unregulated. By this, the respondent from the CBK meant that the FinTechs did not want to approach formal financial institutions so as not to alert the regulatory bodies to their unregulated business practices. Regardless of where the investment comes from, as with any investment the most prominent barrier to gaining capital is the perceived high risk factor. This is based not just upon the valuation of securities or other

more stable options, it is also down to the fact that *'most FinTechs barely survive past three years... 92% of FinTechs that start fail within this market.'* (Anonymous Interviewee).

6.2.4. Political Environment

The upcoming presidential elections in Kenya (8th August 2017) were mentioned by many of our respondents. The main issue was regarding uncertainty, both in terms of the result, but also the potential animosity that could ensue. However, this did not overtly concern most FinTechs we interviewed as, *'in Kenya, there is an expectation that there is always going to be some level of conflict around an election'* (interview with Lelapa). Therefore, although there is a risk to business around the time of elections, this is expected and accounted for. That said, previous elections have had negative repercussions for some individuals and companies that operate in financial markets:

'We had a violent election in 2007, and by the time I managed to liquidate my holdings we were on 48 cents to the dollar. I had to sell my car, my apartment and move back home to my parents... It was a bit of a shocker.' - Interview with Abacus

There was however, an expectation amongst our respondents that this election will not be as turbulent. The other impact is related to uncertainties around what regulations may be imposed by a new government. This is because different parties are trying to attract the popular vote. Equity Bank and attributed the 14 percent cap on banks' lending to a political attempt to appease the masses. Confirming this, one interviewee said that:

'there are a lot of regulations like that which are just a signal to people because the elections are coming, but they might not be implemented for two or three years' -Interview with Eneza

Overall the elections were perceived as a known but unavoidable risk of doing business in Kenya. The general feeling about the forthcoming elections was summed up by Lelapa's CEO: *'I am not particularly worried, but when stuff starts happening that might change'* (interview with Lelapa).

6.2.5. Talent Acquisition

Many of the FinTech companies we engaged with, particularly those who were smaller or newer cited staffing as their biggest inhibitor to growth. This was found to be the case on the managerial side and also on the software development side. One company we spoke to, Eneza Education, provide interactive learning content, based on the national curriculum, straight to young people's mobile phones for a small weekly fee. They argued that it is difficult to hire talented and experienced developers, as *'all the best have already been snapped up by the larger startups'*. He went on to say that this problem also extends to other areas of the business, such as marketing and strategy:

'A lot of the work we are doing is heavily reliant on data. For example, data on new markets, understanding deep TelCo ecosystems...it's not experiments anymore. So we need people who have five or six years marketing experience within a TelCo. The problem with that is that when you don't have the money to pay these people it's going to be tricky. Hopefully when we get the money we can poach high quality people from right within the TelCo space.' - Interview with Eneza

In one interview, our anonymised interviewee, argued that *'growth kills FinTech'*. The reason being is that many FinTech startups are founded by a software engineer or similar, who can build an innovative and engaging mobile app geared towards providing a disruptive financial service. However, as more users come on board, these companies lack the strategy and managerial know-how to take the company forward (Gulati & DeSantola, 2016). As our respondent put it, many of the founders *'start as techies but they don't have the business skills to later measure risk'*, and therefore the company ultimately fails. It is also difficult to attract senior managers with the experience required due to the salary constraints of being a small company, as one interviewee noted:

'It is hard to get qualified people who have the management skills that are willing to take the lower salary. Some bright young guys want to work in a social enterprise but it is definitely the minority, so attracting the top talent is hard.' – Interview with Kiva

Put simply, the more established companies, whether they are telecommunications operators, incumbent banks, or global technology giants, can pay staff more than a small FinTech startup can. Though these problems are by no means unique to the Nairobi FinTech context, the issue is particularly acute because there are a lack of people with the appropriate skills currently demanded by FinTech companies.

6.2.6. Size and Nature of the Market

Though Kenya's economy is growing at a promising rate, as is Kenya's middle-class, the size of the market remains a barrier for many FinTech companies. With a nominal GDP per capita of \$1,422 (IMF, 2016), Kenya is considered a lower-middle income country (World Bank, 2015a). Disposable incomes are much lower than those in advanced economies, and therefore the majority of FinTech companies we spoke to are required to adopt a high-volume, low profit-per-transaction strategy as their business model. Some companies look to the Kenyan diaspora for business, such as Abacus, an online stocks and shares investment platform. Other companies such as Tala and Branch lend relatively small sums of money, usually from \$10-\$500, to riskier and poorer consumers with the high default rates being covered by the even higher interest rates. While both of these approaches are disruptive innovations, insofar as they are divergent from the traditional model of investing or lending offered by banks, both face challenges in attracting sufficient numbers to maintain profitability.

One company that appears to have successfully implemented the high-volume, low-profit model is MODE, who offer nano-credit for mobile airtime. For example, a customer runs out of call credit, and borrows on average \$1.25 through their phone, either for convenience purposes or through necessity. The next time they top up, the amount they borrowed, plus a small amount of interest is deducted (between 2 and 8 percent, depending on the market). MODE lends to 5.5 million customers per day in 31 countries. When asked about the rationale behind their global scale, the CEO of MODE informed us that it was simply a necessity, as the size of the market in Kenya, and profitability per customer would simply not be large enough to match their ambitions. Many other FinTech companies that we spoke to emphasised their plans to scale to other countries within the East Africa region, or indeed, to other parts of the world. Following in M-Pesa's footsteps, and scaling within Kenya to enough low-income consumers to be profitable is proving to be difficult for many Kenyan FinTech companies to replicate.

Another barrier is one that can also be considered as an opportunity, depending on the perspective. The proliferation and prevalence of smartphone technology has allowed hundreds of millions of people across the planet access information and services that beforehand, they were excluded from. However, if one does not have a smartphone, they are excluded even further by these new digital innovators:

'The barrier is to have a smartphone. You need to be able to charge your phone. A feature phone can have power for three days, whereas a smartphone you need to charge every day.' –

Interview with Tala

As our contact from Tala points out, it is not just the ability to purchase a smartphone initially that is required to access the Tala platform, but also the ability to charge it. This naturally excludes, or at least

limits, households that do not have electricity, as the expense required to regularly charge a smartphone at a local market stall may be considered too high for poorer households (World Bank, 2013). It is also more likely to exclude rural households, where electricity penetration tends to be lower (Cook, 2013). As access to disruptive FinTech is so closely tied to the ownership of a smartphone, not having one represents an additional barrier to those already financially excluded.

In addition to the relatively small size of the market, the business environment as a whole was found to be a limiter to growth for FinTech companies. The business environment barriers are multi-faceted. For example, Innova, a company that develops financial software and continuously enhances it using artificial intelligence, raised an interesting point about the nature of fiscal regulations in Kenya. He said that for smaller companies like Innova, it would be useful if the government could create a tiered taxation system, wherein newer and smaller companies that are still in their growth phase can pay less tax for the first few years, or until they reach a threshold where they are large enough. This would allow them, our respondent suggested, to utilise the extra cash to hire more people and boost their capacity. Other companies iterated similar arguments.

Secondly, the general business environment tends to be more ‘*nascent*’ (interview with OkHi), relative to the environments found in more developed economies. This is admittedly an abstract notion that can take a number of different forms. However, one example of this came from OkHi, who were confident that by using their service, other businesses would be able to improve their levels of efficiency. The problem, OkHi explained, was not that it was difficult to convince people that using their service would make them more efficient, but that there was a link between efficiency and profits. The dissonance in this example, according to OkHi, can be explained by a lack of competition within the market, which means companies can be inefficient, yet still survive.

The difficult business environment can also mean that investors or entrepreneurs, especially those from abroad, may come to Kenya to rollout their startup due to its burgeoning reputation as a FinTech hub, only to find that the business context for launching and growing an enterprise presents more hurdles than anticipated:

‘You may have realised that some of the FinTechs here, although they have these great ideas, because they have seen it done in the West, they try and come and do it here and the local context and environment doesn’t allow them to flourish.’ – Anonymous Interviewee

Finally, three respondents mentioned corruption as a challenge, or at least, an issue that they need to be aware of as a business. One such respondent said that ‘*unless corruption is addressed, things will*

continue to be slow. We cannot ignore the impact of corruption in achieving our goals' (interview with Safaricom).

6.3. FinTech's Impact on Financial Inclusion

Many FinTech companies, particularly those in developing countries, market themselves as being economic institutions with a social purpose, whose aim is to offer financial products and services to those who beforehand, would not have had access to them. M-Pesa and others such as KCB/ M-Shwari have undoubtedly had a positive impact in broadening inclusive financing to large sections of society who were formerly excluded. Using M-Pesa and co. as a springboard, many other FinTech companies have argued that their company can have a similar effect for those lower down on the pyramid. In this section, we outline who exactly the FinTech companies we interviewed regard as their ideal customer and where on the economic pyramid this customer would be located. Also explored are the perceptions held by the FinTech companies about to what extent their product and service offerings are contributing to the broadening of financial inclusion in Kenya. Finally, a more critical approach is adopted, where the possibility for FinTech to do harm is discussed, predominantly in relation to exorbitantly priced loans being offered by some FinTech companies, to customers who lack financial literacy.

6.3.1. FinTech's Contributions to Broadening Financial Inclusion

Disruptive innovations such as the various FinTechs in Kenya often arise due to there being a gap, or demand in the market that is not being filled by incumbent institutions (Bower & Christensen, 1995). M-Pesa is a concrete example of how mobile technology can be used to revolutionise payments, and M-Shwari an illustration of using a digital way to democratise how people can save money. Both of these grew rapidly and have remained successful because they solved a pertinent problem: financial exclusion among Kenyans. Other FinTechs in Kenya argue that they are also trying to achieve a social goal, whether it is revolutionising financing for SMEs, or transforming the way the diaspora send their remittances. The majority of the FinTech companies that we spoke to argued that they have launched their products in response to a gap in the market:

‘The reason we see so much expansion in this market is because we have identified a need to allow customers to access to cash in an easier and cheaper way, which is why you have seen the growth in this area.’ – Interview with BitPesa

A very interesting example of this is a company called M-Kopa Solar. The company offers a solar panel on credit, to predominantly rural customers. The solar panel is connected to three LED lights, a mobile phone charging device and a radio, TV, cook stove, depending on the package. Customers pay by M-Pesa per day (\$1.25 for the television package), until the loan has been paid off entirely, which usually takes two years. This solves a problem of electrifying homes that were formerly powerless, allowing them to charge their phones, see at night and access information through their televisions or radio. In addition, successfully repaying the loan also contributes to the customer’s credit score, making future access to financial services easier. Other companies spoke in similar terms:

‘We consider ourselves socially conscious, because in the end 90% of those who are using our loans are using it to meet an immediate need, and not for a luxury... Some guys we’ve worked with are grocery shop owners, boutique owners, salons, boda-boda riders [motorcycle taxis], security guards. People who actually need that money to bridge to a pay check. So they take out a quick loan in the morning, buy what they require, get back money with profit and pay us back with the interest.’ - Interview with Branch

This certainly seems to be the case. Even five years ago, the options for accessing finance for unbanked Kenyans were very limited. For example, to access credit to start a business, choices were limited to asking family and friends, joining a Savings and Credit Cooperative (SACCO), or alternatively, going through the notoriously ruthless loan sharks. The wave of disruptive FinTechs, though still somewhat exclusionary, has forged new avenues for unbanked Kenyans to overcome their financial challenges.

6.3.2. FinTech’s Target Customer in Kenya

During our semi-structured interviews, we asked every FinTech company to identify and describe their ideal customer, before asking them where on the ‘economic pyramid’ they believe that this customer is

placed. Also questioned was how they market their products to these customers. These questions were asked in order for us to gauge how these FinTech companies are segmenting the market.

We noticed a general distinction between Business to Customer (B2C), and Business to Business (B2B) FinTechs in who their clients are and how they target them. Broadly speaking, it was found that whereas banks and other formal financial institutions serve those at the top of the pyramid, FinTechs tend to serve those in the middle of the pyramid. However, whereas B2B orientated FinTechs tend to direct their products towards those at the middle, or upper middle of the pyramid, often to formalised businesses, FinTechs with a B2C focus aim for the middle to lower-middle. The exception to this pattern are FinTech companies that have an international business model, such as Abacus, who aim to encourage the diaspora to invest in the Kenya Securities Exchange, or BitPesa, who use blockchain technology to facilitate cheaper international money transfers. These companies naturally market their products towards those at the upper end of the pyramid, to those who have a need to remit or invest money in Kenya. Credit company, Tala, shared their perspective on where on the pyramid they seek to serve:

'Originally we thought we were serving the BOP but we actually serve the lower-middle income, and a little bit of the upper-bottom of the pyramid. These are some of the people who take money every day because they're running a business. They take money, buy supplies and pay the same day. If you go upwards, these are the people who borrow for one month, and their needs are for Pay-tv, which is a luxury, not a basic need. Someone lower down is paying for medical needs. We are not at the complete bottom, but slightly above.' - Interview with Tala

Many of the B2C companies made similar statements about being not quite at the bottom, but just above. There are two possible reasons for this. The first is that contemporary FinTech companies in Kenya, particularly B2C companies are almost universally reliant on smartphone possession and usage. Without a smartphone, users remain excluded from partaking in these new methods of finance. Furthermore, though smartphones are continuously becoming cheaper to purchase, at least for basic models, they still remain too expensive for the poorest sections of society. Secondly, like the banks that these companies are trying to disrupt, FinTech companies cannot or at least do not go down to the bottom of the pyramid because it is perceived as not a profitable enough strategy. The only companies that have managed to overcome these two barriers in Kenya are M-Pesa and M-Shwari who negate the smartphone reliance by designing a product that continues to be operational on feature phones (they were launched before the smartphone boom), and there are no initial fees that would prohibit poorer users from being able to sign up. These companies make money based only on the size of the transaction, with small transactions being free for customers.

'[We serve the] bottom of the pyramid. I mean, we had per second billing, not per minute. We went totally prepaid. There were certain dynamics that worked in our favour. We had a very good distribution network...You must remember that we started off with 300,000 people connected; people who could afford a phone. We said sim cards need to be dead cheap and we needed to subsidize phones to get them into people's hands. That empowered people to do a lot of stuff.' - Interview with Safaricom

In sum, even though FinTech is broadening financial inclusion to those lower down the pyramid, many FinTech companies are often exclusionary themselves, and therefore the needs of the poorest in Kenyan society continue to be overlooked, despite being arguably the strongest.

6.3.3. Financial Literacy

As outlined earlier, researchers have shown how financial literacy can be a positive contributing factor to financial inclusion (Kefela, 2010; Wachira & Kihui, 2012). However, Klapper, Lusardi, & van Oudheusden (2017), argue that having access to finances is not the end in itself, rather it is a means. They suggest that people can have access to products without the knowledge of how to effectively use the services, and this can lead them to encounter serious financial issues such as bankruptcy and large debts. This view was supported by Caytree who argued that there is often a lack of proper differentiation between financial literacy and financial inclusion. Our respondent believed that access to finance is not an issue in Kenya, however, *'access doesn't mean your life has changed'* (interview with Caytree). Our respondents had different views and reservations about the relationship between FinTech, financial literacy and financial inclusion. Everyone acknowledged that there was a financial literacy issue in Kenya, however some were making greater strides than others to address the problem. A number of our respondents had simplified their products for their target customers. For example, Branch do not charge a percentage interest on their loans, but rather they add a fixed fee. This they argue is a case of *'basic understanding. Our end user doesn't want to have to be bogged down by having to calculate and do the math [sic], so it's a fee'* (interview with Branch).

However, other interviewees had looked beyond their own products to address the problem more widely. Abacus offer classes on the basics of wealth management and investment whilst Eneza have rolled out a business acumen course for their mobile subscribers. Both Caytree and Umati focussed on educating their clients about formal account keeping as part of their service offering, and this was

initially how Tala started too. Many of the companies and institutions we interviewed felt the obligation to educate their customers both about their own products and also about financial management in general. However, whilst many of the startups cited lack of resources as a reason for their inability to address the problem, most said that they will work on it in the future. Our anonymised interviewee argued that financial literacy is a huge problem and cause for concern as they believe that many customers do not understand the implications of the contracts they are signing. Kiva and Tala elaborated on this threat, stating that due to poor financial literacy, customers who take these loans are at greater risk of over indebtedness and downward debt spirals.

6.3.4. FinTech Doing Harm

Many FinTech solutions in emerging economies are heralded as positive and the companies behind them presented as social enterprises. There is however a growing concern that a lack of financial literacy amongst customers, coupled with aggressive and predatory business practices could start (or, is already) producing outcomes detrimental to the livelihoods of consumers. The biggest concerns lie with FinTech companies that operate as mobile lenders.

‘FinTechs, to some extent, you can even classify them as enterprises that are quite extractive. But, again it is a lot of risk so they require the kind of return to make a business case. I think the biggest concern right now is the issue of Kenyans - especially those in the lower bracket - are becoming over-indebted... Is that finance that will drive growth, or is it finance that in the long run will become detrimental?’ – Anonymised Interviewee

This is really the crux of the issue. Unregulated FinTechs are able to offer loans to customers who simply cannot meet the repayments without falling into more debt. Our respondents outlined some of the factors which are contributing to this problem, ranging from lack of data to predatory practices.

Innova outlined how easy it was to switch between different lenders. There are very few safeguards against a borrower having multiple loans at any given time and this is compounded by the fact that none of these MFIs are mandated to register their consumer’s loans with the Credit Reference Bureau (interview with Tala). The lack of credit filing by MFIs could also contribute to consumers having recurring difficulties in accessing credit:

'We recognised everyone having access to credit is a problem because of lack of information for borrowers on lenders and visa-versa. Lenders lend at really high interest rates because it is so risky, and they do not have any information about borrowers, and the borrowers don't know where else to get money.' - Interview with Caytree

However, the lack of information and high interest rates were not the greatest cause for concern amongst our respondents. Many noted that although the interest rates, which at over 200 percent percent APR (interview with Tala), are substantially higher than those offered by formal financial institutions, they are a vast improvement on the rates offered by informal lenders. The biggest issue that our interviewees presented was the way in which an individual can enter into a spiral of debt. One respondent's opinion on the high interest rates offered by FinTech MFIs was split:

'It is detrimental but it is giving them access to working capital which they would have otherwise not had. So it depends on how you look at it and some people have made good use of it. The problem is when you become over-indebted...all you are doing is just borrowing round and round and building up your debt. So there are two sides of the coin. But however you look at it, it has unlocked opportunities for some.' - Anonymised Interviewee

This was also a concern that Tala had about the lack of credit information sharing and due diligence, arguing that: *'we may get into a situation where some FinTech[s] who are desperate for customers will still give out money and then people will rob Peter to pay Paul, recycling loans over and over'*. As mentioned in section 6.3.3. on financial literacy, Kiva believe that there is too much scope for predatory companies:

'As there becomes a larger business case for serving this population, there will always be people coming in who want to make money off people. It's the good and bad of operating at the bottom of the pyramid.' - Interview with Kiva

Although institutions such as Grameen Bank have showcased the positive impact and benefits of micro-finance, our interviewees gave us a stark warning against assuming all MFIs are social enterprises with good intentions.

7. Discussion

The purpose of this research is to explore why Nairobi has developed into a renowned FinTech hub, what the barriers are to further growth for FinTech companies, and how this FinTech is perceived to be contributing to the broadening of financial inclusion. Drawing upon both the literature and also the data outlined in section 6, this section will address the research purpose, and answer the three research questions:

1. What are/ were the factors which contributed to the development of the FinTech sector in Nairobi?
2. What are the existing barriers inhibiting the further growth of FinTech companies in Nairobi?
3. How is FinTech perceived to be contributing to the broadening of financial inclusion?

7.1. What Are/ Were the Factors Which Contributed to the Development of the FinTech Sector in Nairobi?

The Nairobi FinTech space has developed due to a coalescence of a number of factors, many of which are unique to the Kenyan context. Ultimately, the foundation of disruptive FinTech is based upon companies finding ways to serve some customers' needs better than the existing incumbent institutions. The first factor, as is the case in many emerging markets, was that large segments of Kenya's population were unserved or underserved by formal financial institutions. These institutions have rightfully been accused of staying too close to their high profit customers, and therefore ignoring less financially attractive or riskier customers further down the pyramid. This left a large space for FinTech innovations to step into. Emerging from this situation was market-leading TelCo, Safaricom, with the advent of M-Pesa. M-Pesa's rapid growth and success has acted as a launch pad for other FinTech solutions, almost all of which are based on the proliferation of smartphone technology. The Economist concurs, commenting that Kenya "differs from its silicon sisters in one crucial regard. From the start, its tech firms have designed their products for mobile phones rather than computers." (The Economist, 2012).

In addition, the growth of the sector was made possible due to a supportive and facilitatory business environment, which allowed FinTech to flourish. The FinTech innovations have appealed to the aforementioned entrepreneurialism present in Kenya, which has arguably led to relatively high adoption rates of many FinTechs. 41 percent of young Kenyans have a side business, with the top three types

being agriculture, online businesses and ICT respectively (Wangari, 2017). What this means for FinTechs is that they are launching and attempting to scale in a context in which consumers are very receptive to trying new innovations, particularly those that may benefit them financially. As one respondent put it, *'Kenyans are very open to new ideas and new technologies; so long as it works for them they will try it'* (interview with Innova). Furthermore, in terms of starting a company and doing business in Kenya, many companies have heralded the support provided by innovation hubs and incubators. This, coupled with an open business environment and encouraging regulatory framework has encouraged many FinTech companies to launch their products in the Kenyan market. The historical stability of the market has also stimulated global and local investment contributing vastly to the financing of the FinTech startups, at least in their launch phase.

Some of the factors behind Nairobi's FinTech growth are unique to the Kenyan context. For example, Safaricom's dominance played a large part in constructing the foundations behind the FinTech sector in Nairobi. Safaricom presides over 63.8 percent of the TelCo market, and it is this dominance which has been credited with providing the platform from which M-Pesa could scale so rapidly (Communications Authority Kenya, 2016):

'Having one platform that you can rely on has helped, none of the other countries [emerging markets] have as dominant a mobile player as Safaricom' - Interview with Kiva

The formation of M-Pesa by Safaricom was also helped by a conducive regulatory environment and a context in which mobile technology was both trusted and prevalent. These developments by Safaricom are context-specific to Kenya, and this is arguably why M-Pesa's launch in other African markets has been relatively less successful (Llewellyn-Jones, 2016).

For other countries and cities looking to follow in Nairobi's FinTech footsteps, it may be encouraging to know that some of the facets that underpinned the growth of the sector can indeed be replicated. Firstly, Kenya's recently-improved high-speed internet connectivity was mentioned by many companies as a necessity for their operations. Though the installation of fiber optic cables is a costly exercise for many emerging markets, it is an essential foundation for the world's increasingly digitalised business environment (Minges, 2016). Secondly, Kenya has intentionally synthesised a comparatively open business and regulatory environment, which has in turn propelled Nairobi into becoming the region's primary economic powerhouse. Other countries can follow Nairobi's lead by implementing policies to encourage international businesses and foreign staff to locate in Nairobi and also for local entrepreneurs to create and grow their own enterprises.

7.2. What are the Existing Barriers Inhibiting the Further Growth of FinTech Companies in Nairobi?

Although Kenya is undeniably a pioneer amongst African countries in terms of providing FinTech solutions, our research shows a number of barriers inhibiting further growth of the FinTech sector. To summarise, these are:

- Uncertainty around formation of future regulations especially currently, in light of the forthcoming election;
- Unavailability/ lack of data;
- Difficulties in attracting working capital both in terms of credit or investment;
- Lack of industry experience in talent pool;
- Limited size of the market in Kenya;
- Challenges for FinTech companies reaching those at the bottom of the pyramid.

Although there has been research that addresses some of these factors individually (Assa-Maor, 2017), we have yet to come across a single paper that holistically investigates the barriers to the growth of FinTech companies in Kenya. We therefore view our exploration as an important piece of research not just for Kenya's FinTech sector, but also for the sectors in other countries who can possibly learn from Kenya's successes and challenges.

Our interviews highlighted that different FinTech companies face a number of different obstacles and these are dependent on their size, age, function and target customer. No individual barrier can be considered as the most prominent. We found that although there have historically been barriers to entry into the FinTech market, these have been vastly reduced in recent years (interview with MODE). We believe this has contributed to the 92 percent failure rate of FinTech startups in Nairobi (anonimised interviewee) as more businesses launch without a solid strategic business plan (interviews with MODE & iHub). Other companies suggested that whilst there is a lot of funding available for startup companies with a good business model (interview with Tala), obtaining financing later on for working capital is trickier. We therefore see that the biggest barriers are not in starting a company, but rather maintaining and growing that company to the extent that it has a tangible impact on wider Kenyan economy.

In terms of talent acquisition, many of the smaller FinTech startups noted that they could not compete with the bigger companies regarding remuneration of experienced local talent, nor could they afford to

bring in employees from abroad. They suggested they were stuck competing for a limited number of predominantly junior candidates within the Kenyan market. Respondents expect this to change however, as educational institutions in Kenya continue to add to the talent pool (Kenya National Bureau of Statistics, 2015), and also experienced and skilled labour from other areas see FinTech as an increasingly attractive place to work, as has happened in more established FinTech hubs (Williams-Grut, 2017).

In regard to fostering a more efficient and useful regulatory environment, there needs to be greater communication between FinTech companies and regulators. Although the Capital Markets Authority, the regulatory body responsible for overseeing market intermediaries in Kenya, has “commenced efforts towards the establishment of a Regulatory Sandbox structure” (Capital Markets Authority, 2016) this has not been reflected by the Central Bank of Kenya especially due to their lack of capacity. Whilst ‘*the regulations are set by the CBK, not the operators*’ (interview with CBK), the regulations address spaces carved out by new FinTech innovations, and therefore the biggest threat for the FinTech could be to not enter into conversation with the regulators. Ultimately, FinTech companies are well aware that if they scale, they may enter a space already occupied by formal financial institutions and therefore enter into a regulatory minefield. For FinTechs to succeed, they therefore need to have the conversation and prove to the regulators that their FinTech can have a positive impact for Kenya and Kenyans. The lack of data presents both an opportunity and a threat. For example, many companies are basing their business models on alternative data collection methods. Caytree however, believe that comprehensive credit filing systems are only 5-10 years away and Innova outlined the efforts the government are making in digitising their records. Therefore, we can assume that as there are more entrants and solutions within the market, the availability of data will increase. It seems there is a fine line between regulation and innovation.

The final factor we view to be inhibitive for the growth of FinTech in Nairobi is the limitation of the market, both in terms of its size, and also in being able to access consumers. The inability of FinTech companies to target their products and services towards those at the bottom of the pyramid was the biggest concern. This was due to many factors including the initial cost of purchasing a smartphone for the customer, as well as having access to a power source to regularly charge it. For the MFIs, the factor of risk also plays a significant role. If the FinTech companies wish to target the lower end of the pyramid, they must somehow offset the risk of a large number of defaults. Unless they can figure out an innovative payment system like MODE’s airtime model, they will be stuck with using higher interest rates to offset bad loans. This in turn could have a vastly negative impact upon their customers and lead to increasing amounts of over-indebtedness, and possibly even on the stability of the national economy.

In sum, the challenges facing FinTech companies in Nairobi are multidimensional and originate from a variety of sources. However, the trend amongst all barriers is that there is a good chance that with time, their impact upon FinTech companies in Kenya will decrease. For example, as Kenya continues to improve levels of education across the country, and as FinTech becomes a more attractive sector to work in, acquiring talent should be easier. As there are more Kenyan FinTech success stories, it would make sense that more investors regard the growing Kenyan FinTech sector as an attracting place to invest. As Kenya continues in its ascent towards middle-income status and its population grows wealthier, one would expect that financial literacy will continue to improve and subsequent demand for alternative FinTechs will also increase.

7.3. How is FinTech Perceived to be Contributing to the Broadening of Financial Inclusion?

There is often a perception of FinTechs as social enterprises. This has stemmed from several factors, one being the ability to extend financial products to customers unreached by formal financial institutions. It is also based on the assumption that the services these companies provide are beneficial to the lives of the individual customers, e.g. in giving them greater security in money transfers or savings, M-Pesa and M-Shwari being prominent examples in Kenya. Throughout the majority of our interviews, the FinTech companies positioned themselves as catalysts of social change and inclusivity. There is no denying that they have had a profound impact upon financial inclusion in the sense that they have brought into the sphere swathes of people that previously had limited access to financial services. However, that is not to say that the disruptive FinTech innovations that have permeated the Kenyan finance markets are perfect or entirely solving the problem of financial exclusion. The many FinTech services on offer are increasing the competitiveness across the market, passing on the value to the end customer and making finance more affordable. This seems set to continue due to the increasing levels of financial literacy in Kenya and the increasing availability of smartphones, which allows the user to access a broader array of mobile financial services.

As outlined previously, there are limitations on the reach of the FinTech services. One of these relates directly to the integration and use of smartphones. Although mobile phone penetration in Kenya is high, rising to 90 percent in 2016, smartphone usage still lags behind 44 percent in 2016 (Kemibaro, 2016).

Not possessing a smartphone now represents one of the biggest barriers for those at the bottom of the pyramid accessing the wave of disruptive products and services offered by FinTech companies.

The second major obstacle inhibiting serving those at the bottom of the pyramid is cost effectiveness. It is only M-Pesa and M-Shwari that have truly managed to serve these customers, and no FinTechs since have managed to broaden financial inclusion in the same way. The reason there is an inability for FinTechs to be cost-effective at the bottom of the pyramid is the same as for institutions in the formal space: that it is simply not profitable enough. The second aspect is that of risk; due to lack of customer data, coupled with an inability to recoup payments (from defaulted loans or otherwise) due to cost inefficiencies, the risk of serving the bottom of the pyramid is perceived as very high.

The knock on effect that this has for FinTech companies targeting the bottom segments of the pyramid is that either they avoid the segment altogether, or they offer an adjusted service. Mobile lending platforms are a good example of this. Many have extremely high interest rates attached to their loans in order to offset the risk of customers defaulting. This has led some of our respondents to suggest that these mobile lenders who present themselves as social enterprises are in fact detrimental to the livelihoods of the people they serve. Our concerned respondents suggested that many customers are using these loans without being financially literate enough to understand the implications of high interest rates, or that they are using them to respond to financial crises.

Although FinTech companies have improved the financial offerings of the informal money lenders and introduced digital transfer systems that are far superior to physically transporting cash across the country, the assumption should not be made that they are altruistically supplying financial solutions. The current regulations around private lending mean that there is no cap on interest rates for unregulated FinTechs, when this is coupled with low rates of financial literacy, there is a much bigger need for oversight. Many FinTechs argued that regulation kills innovation, however after conducting this research it is clear to see that there needs to be greater oversight concerning the private mobile lending platforms, especially as banks are capped at 14 percent and therefore failing to serve the risky customers at the bottom of the pyramid.

8. Limitations

The FinTech space in Nairobi is moving so rapidly and is so dynamic, that if we had to start again, we are confident that we could speak to 21 entirely different stakeholders. The inherent complexity of business, the distinctive paths that each takes to get to where they are, and challenges they face going forward means different companies could have raised different issues entirely, had we had the chance to interview them. Therefore, the reader should not consider the findings of this thesis as completely representative of Nairobi's FinTech sector. Rather, this study should be considered a snapshot provided through a qualitative lens.

In terms of the impartiality of the data provided by respondents, there are of course some limitations. The main priority of interviewees working for a company, whether they are the CEO or an employee, is to advance the interests of that company. This is not to suggest that respondents were sometimes dishonest, but rather that they may not always have been impartial with the information they chose to advance during interviews. We tried to negate this by talking to a diverse range of stakeholders, rather than purely FinTech companies. We also adopted a critical approach to the study, and were sceptical of any overly-impressive claims. Furthermore, information was cross-checked and verified as much as possible before it was included in the study itself.

9. Conclusions

FinTech is an exciting sector, not just in terms of its investment potential, or its ability to disrupt incumbent financial institutions, but due to its ability to revolutionise the way that business is done, and the way that people live their lives. M-Pesa's rapid growth is a common example of this that has achieved global attention, but Nairobi is home to myriad other FinTech innovations or companies who are aiming to be similarly transformational. Nairobi in recent years has emerged as the foremost FinTech hub in Africa, and this is due to the coalescence of a number of factors. The inadequacy of the formal financial sector created the demand for innovative and disruptive FinTech companies to solve some of the challenges around financial exclusion. Safaricom at the time was Kenya's dominant TelCo, and it leveraged this dominance when launching mobile money transfer platform M-Pesa, which has since revolutionised the way money is transacted and how business is conducted in Kenya. Following in M-Pesa's disruptive footsteps, a multitude of further FinTech companies have since emerged in Kenya, seeking to transform other financial products and services. Their growth has been supported by what is a fairly open and supportive business and regulatory environment, and an entrepreneurial population of users who are largely willing to try new innovations.

However, it is not all plain sailing as FinTech firms face a number of barriers which inhibit or restrict their growth. These barriers vary depending on the FinTech company spoken to, with many companies facing a number of challenges simultaneously. The challenges most frequently mentioned were as follows: the best software-development talent is usually hired by international technology giants or TelCos, whilst experienced managerial capacity is difficult to obtain due to FinTech currently being regarded as a less attractive career path. FinTech companies also struggled to access the market data and information required to make informed decisions. Both of these factors limiting how effectively a company can strategize growth going forward. Both the regulatory and political environment are obstacles for some FinTech companies, as both create uncertainty. Attracting investment, particularly for working capital is also a challenge for many companies. However, as FinTech companies seek to follow M-Pesa's pioneering growth in Kenya, and some become successful, many of these barriers are likely to lessen in the future. FinTech looks to remain a very promising sector in Kenya's economy.

Finally, many FinTech companies position themselves publicly as social enterprises, who are broadening financial inclusion to those lower down the pyramid. This is undoubtedly true to some extent. Both individuals and SMEs alike who were formerly excluded from the formal financial sector now have an increased amount of options for financial products and services that they can draw upon. However, whilst the many FinTechs talk about their social feats, they still struggle to serve those at the bottom of the pyramid. This is in part due to their over reliance on smartphone technology. Not

possessing a smartphone now represents one of the biggest barriers for those at the bottom of the pyramid accessing the wave of disruptive products and services offered by FinTech companies. Furthermore, there is preliminary data to suggest that some aspects of FinTech, particularly mobile lenders, can actually be doing some harm with their easily-accessible loans that are exorbitantly priced and marketed towards financially illiterate consumers.

Ultimately, it is a very dynamic time for FinTech in Kenya, and much can be learned by other countries both from Kenya's success thus far but also from the challenges it is currently trying to overcome. FinTech companies are allowing many consumers to take part in the financial sector and leapfrog the incumbent institutions that formerly excluded them.

9.1. Further Studies

There is substantial scope for follow-up studies on this topic, particularly due to how new and relatively unexplored FinTech is, especially from an academic perspective. A comparative study with other FinTech hubs, particularly within Africa such as Lagos or Johannesburg, would be both interesting and useful. It would help shed some light on what aspects of Nairobi's growth as a FinTech hub are context-specific, and what can be replicated elsewhere. Also, both the barriers to further growth for FinTech, and also the contributions FinTech is having on broadening financial inclusion elsewhere would be interesting to note in order to gauge the social and economic role of FinTech from a broader perspective. In relation to this, this study explored the contribution that FinTech is having in broadening financial inclusion to those lower down the pyramid, and was based on the perspectives of the FinTech companies themselves. A follow up study from the consumer's perspective is essential, so that the supply side innovation originating from the FinTech enterprises can be complemented by the demand side of innovation from the users.

10. Appendix

10.1. Table of Interviewees

Company	Individual	Position	Date
	Joel Macharia	CEO and Founder	26/4
	*	*	18/4
	Kemi Adeyanju David Yen	Head of Regulation and Corporate Affairs Regional Business Development Manager - East Africa & APAC	26/3
	Martin Githaiga	Head of HR and administration	12/4
	Karibu Nyaggah	CEO and Founder	18/4
	*	*	7/4
	Kago Kagichiri	CEO and Co-founder	18/4
	*	*	19/4

	Lincoln Njogu	Developer Relations	6/4
	Vincent Ntalami	Director and Co-Founder	6/4
	Rachel Lewis	Portfolio Manager - Anglophone Africa	19/4
	Jerry Crossan Elizabeth Howard	Co-founder and Business Development East Africa CEO and Co-founder	10/4 13/4
	*	*	10/4
	Julian Kyula Kevin Omondi	CEO and Founder Director and Head of Innovation	24/4
	Timbo Drayson	CEO and Founder	21/4
	Shaka Kwach	Head of Special Projects	27/4
	Rose Muturi	Country Manager	20/4
	Patrick Huang	Manager - Financial services	6/4

*Denotes anonymised respondents. Table does not include angel investor interview on 28th April nor totally anonymised interviewee.

10.2. Interview Guide

General Questions/ Intro

- How long has [company name] been in operation?
- And what do you do?
- What differentiates your company from a formal financial institution?
- How many staff work for [company name]?
- What have been the biggest successes so far?
- Who are your target customers and where?
- Who are your competitors and how do you differ from them?
- Do you target just the Kenyan market, East Africa or the world?
- How long have you worked here and what did you do before this?
- What's your professional background?
- Have you always been interested in FinTech/ Digital Finance or did you kind of fall into it?

The Growth of FinTech

- What are your thoughts on the Kenyan FinTech scene?
- Why do you think the FinTech has grown so rapidly here?
- Formal financial institutions such as banks have a reputation for excluding many sections of society, why do you think this is?
- What type of people are most likely to be excluded by banks?
- Is there a difference between the growth of FinTech in Kenya and that in other African countries?
- Where else in Africa has an exciting FinTech scene?
- How do you think banks will respond to the growth of FinTech?
- Compliance factors

Financial Inclusion

- Who uses your products, is it predominantly individuals, businesses or both?
- If both, do you differentiate your products between the two?
- How do you target/attract new customers?
- Why is there a demand for your service among Kenyans?
- Who is your ideal customer?
- Do you target specific sections of society?
- Are you doing anything to direct your services towards marginalised groups, such as women or the poor?
- Do you work in partnership with any other companies, FinTech or banks?
- What are the main advantages of using your product, rather than if they went to a bank?
- And what are the disadvantages?
- Do you find that financial illiteracy is a problem for your clients?

- Are there any implications for the user in terms of their credit score for when they use other financial products?
- Do you see your product as something that is more for urban Kenyans, rural Kenyans or both?

Barriers to Further Growth

- What are your main challenges?
- What is stopping a bank from doing what you do?
- What or who is your biggest competitor or threat?
- Do you see the competition as positive or negative to your organisation?
- Are there any specific regulations or government involvements that you see as a challenge?
- Are there policies or other countries which you believe Kenya could use as an example?
- What challenges have you faced in entering international markets?
- What are the biggest barriers for a startup FinTech company?
- Is the Kenyan market strong enough to match your ambitions
- What are investors looking for?
- Is corruption an issue for you?

10.3. Pre-Interview Script

We are Masters in Management students doing research for our thesis on the Kenyan FinTech sector. We are specifically looking at; how Nairobi came to be such a renowned FinTech hub, what the barriers are to further growth for FinTech companies, and how FinTech is contributing to financial inclusion.

Just to let you know that we would like to record this interview, so that we can transcribe it, and use your insights in our thesis. Is this okay with you? You will be able to withdraw your consent at any time afterwards and we will confirm with you how we are using your inputs before it goes into the final version.

Some of our questions may feel rudimentary, but for our research purposes we would appreciate if you could answer in as much detail as possible.

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