UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Master Degree Project in Innovation and Industrial Management

Financial Inclusion in the Age of FinTech

A multiple case study of FinTech companies' role for financial inclusion in India

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Abstract

Today, there exists a global problem of financial exclusion, meaning that over two billion people and 200 million micro, small and medium-sized businesses have limited access, or no access at all, to basic formal financial services and products. The problem of financial exclusion is most severe in developing countries and despite various initiatives undertaken by governments and NGOs, the progress towards financial inclusion has been slow. However, the newly emerged FinTech sector, with FinTech companies employing new business models at the forefront, is now being described as a potential solution to the problem of financial exclusion. Therefore, the purpose of this thesis is to investigate how FinTech companies could actually contribute to the improvement of financial inclusion, by examining how their business models account for the barriers to financial inclusion, as well as what the main challenges for FinTech companies to improve financial inclusion will be. Having severe problems of financial exclusion while simultaneously emerging as a global FinTech hub, India was chosen as an empirical setting for the research. The study further applies a qualitative research strategy by conducting 10 semi-structured interviews with FinTech companies located in Bangalore, India. The study found that FinTech companies will likely be able to greatly improve financial inclusion in the upper half of the financially excluded segment, where financial and digital literacy levels are higher. However, the high acquisition costs that the FinTech companies face in the lower half of the financially excluded segment question their ability to provide affordable and sustainable solutions to the lower part of the segment. As it also was indicated that the FinTech companies are not adequately addressing the issue of financial illiteracy, overcoming the challenge of acquisition costs might in fact turn out harmful for the financially excluded if the issue of financial illiteracy is not simultaneously addressed.

Keywords: financial inclusion, FinTech, business models, bottom of the pyramid, financial industry

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List of Abbreviations

BC: business correspondent
BOP: bottom of the (economic) pyramid
KYC: know your customer
MFI: microfinance institution
MSME: micro, small or medium-sized enterprise
NBFC: non-banking financial company
NGO: non-governmental organisation
OECD: The Organisation for Economic Co-operation and Development
POS: point-of-sale
SDK: software development kit

1. Introduction

The introductory chapter aims to provide the reader with a background to the purpose of the thesis. Firstly, an introduction to the topic of financial exclusion is provided, followed by a description of the emerging FinTech sector. The chapter then proceeds into a discussion of the problem at hand, followed by a description of the purpose of the study and the formulation of a research question. Lastly, the scope and delimitations of the study are discussed, and the thesis' disposition is presented.

1.1 A Problem of Financial Exclusion

Today, over two billion individuals and over 200 million micro, small and medium-sized businesses (MSMEs) across the globe only have limited access, or no access at all, to basic formal financial services and products (World Bank, 2017). These basic financial services and products are needed to cover day-to-day living needs in terms of savings, credit, transactions, payments and insurances. The state of having a highly limited access, or no access at all, to these kinds of services has been termed *financial exclusion.* Being financially excluded imposes serious implications; it largely limits the ability to start and expand businesses, invest in education, gain employment, manage risk, absorb financial shocks, and it is overall highly correlated to poverty and inequality (Demirguc-Kunt, Singer, Klapper, & van Oudheusden, 2015). Although being present to some extent in most economies, the problem of financial exclusion is furthermore magnified in developing and emerging economies (UNCDF, 2017). Due to their limited access to formal financial services and products, many financially excluded individuals and businesses are forced to turn to informal financial solutions, that in comparison to formal financial services often are more unreliable, expensive, risky, and less flexible (Manyika, Lund, Singer, White, & Berry, 2016).

The process of improving access to these basic formal financial services and products, and to thereby improve *financial inclusion*, does then have profound inherent benefits. Indeed, The World Bank (2017) labels financial inclusion a key enabler for poverty reduction, and further states that financial inclusion could enable as many as seven of the UN's 17 sustainable development goals. As a result, many governments across the world have initiated or planned national financial inclusion strategies (Sethy, 2016; The World Bank, 2017b). However, despite these initiatives, full financial inclusion still remains distant in large parts of the world. In 2014, account ownership among adults were around 50% or lower in all parts of the world except from in the high-income OECD countries and in the East Asia/Pacific region where account ownership was at 94% and 69% respectively (The World Bank, 2018). In the Middle

East, South Asia and Sub-Saharan Africa, adults were also three times less likely than individuals in high-income OECD countries to borrow money from a financial institution, with only around 6% having done so during the past year. These regions were instead much more reliant on using informal systems (The World Bank, 2018). Similarly, around 50% of MSMEs in developing economies are unserved or underserved by credit services (Manyika et al., 2016). The measures and solutions that have been introduced to promote financial inclusion have also been varying in terms of success. Even the effectiveness of microfinance institutions (MFIs[1]), once lauded as the market-based solution to poverty, has recently been put into question (Demirguc-Kunt, Klapper & Singer, 2017; Gabor & Brooks, 2017). Studies have indicated that MFIs might actually have adverse effects and instead contribute to over-indebtedness among the lowest income segments (Barman, Mathur, & Kalra, 2009; Mader, 2013).

1.1.2 The Promise of FinTech

While the progress towards financial inclusion is then only slowly developing throughout the world, recent developments in digital technologies have enabled a new financial industry sector to emerge; the FinTech sector. FinTech is a portmanteau of the words *financial* and *technology* and refers to the use and application of new technologies to provide improved financial services and products (Schueffel, 2016). The potential implications of FinTech on financial inclusion are significant. Manyika et al. (2016) estimate that digital financial services could help as much as 1.6 billion people in emerging economies to gain access to financial services, and also increase the amount of loans provided to individuals and small businesses with US $2.1 trillion. Having the potential to drastically reduce costs and increase the availability of financial services, FinTech is now then not surprisingly frequently being proposed as a promising remedy to financial exclusion (e.g., Alliance for Financial Inclusion, 2017; KPMG, 2017; Lewis, Villasenor, & West, 2017; The World Bank, 2017). At the forefront of the FinTech sector, driving the development of new digital financial services, are the FinTech companies, which have been described as having the potential to profoundly disrupt incumbent financial institutions in every aspect of the financial industry (Gomber, Koch & Siering, 2017). In fact, even though banks and other traditional financial institutions have started to engage in FinTech themselves, as much as 88% of incumbents believe that part of their businesses risk being lost to these new FinTech companies (PWC, 2017). These FinTech companies have focused on building new innovative business models around emerging technologies (Gomber et al., 2017), and it is through these new business models that FinTech likely will make its greatest impact on the financial services industry (PWC, 2016).

[1] Microfinance Institution (MFI) is “an organization that provides microfinance, usually in developing countries” (Microfinance institution, (n.d.))

1.2 Problem Discussion

1.2.1 FinTech and Financial Inclusion - An Unexplored Topic

By being central to the development of FinTech, FinTech companies could then in extension play a significant role for realising FinTech's promise of financial inclusion (Gomber et al., 2017). However, as the FinTech sector is still in its cradle, little academic research has been undertaken on the topic (Schueffel, 2016), and even less so in the context of financial inclusion. Therefore, there is a need to more fully understand the interconnection between FinTech and financial inclusion. Furthermore, early research on FinTech has identified a particular need to investigate the specific role of FinTech companies (Gomber et al., 2017), how they approach their customers, what segments they are targeting, and what makes them unique in comparison to incumbent financial service providers (Schueffel, 2016).

What emerges from these recent developments in the financial industry and the lack of knowledge on the dynamics of FinTech companies is then the question of how FinTech companies will actually impact financial inclusion. In order to answer such a question, it is necessary to understand how FinTech companies relate to the barriers of financial inclusion that historically have proven to be such difficult challenges to address. In particular, looking at how these FinTech companies' business models relate to financial inclusion would be of interest due to the centrality of the business model for these new companies, and also as previous research has found that the business model plays an essential role for capturing the value generated from new technologies (Chesbrough & Rosenbloom, 2002). Given that there exists a strong correlation between financial exclusion and poverty (Carbo, Gardener & Molyneux, 2007; Koku, 2015), investigating how FinTech companies' business models could account for the challenges of providing financial services to the financially excluded segment is a research agenda that is also supported by a research calling from the *bottom of the (economic) pyramid* (BOP) literature. Reviewing a decade of research on the BOP, Kolk, Rivera-Santos and Rufín (2014) argue that existing literature has generally proposed a one-size-fits-all approach, even though the variation of different BOP-contexts likely require different business models. It therefore exists a need to more deeply study the different business models that are being applied in different BOP contexts, such as specific industries, in order to further advance the BOP literature (Kolk et al., 2014). Indeed, renowned BOP academic Prahalad (2012) further argues that BOP solutions need to be industry-specific, and that these solutions need to be focusing on business models. Therefore, shedding light on how FinTech companies approach the challenges of serving the financially excluded segment could also contribute to the understanding for how BOP solutions should be designed within the financial industry.

1.2.2 FinTech and Financial Exclusion in India

One of the developing economies where financial exclusion is a major cause for concern is the Indian economy. The country currently has an adult population of 950 million (The World Bank, 2018b), and in 2014, only 53.1% of them possessed a bank account, and just 14.4% saved money at a financial institution (The World Bank, 2018). In terms of credit, only 6.4% borrowed money from a financial institution, while the use of informal lending such as lending from family and friends (32.3%) and from informal lenders (12.6%) was much more common. While experiencing these severe problems of financial exclusion, India is simultaneously emerging as a global FinTech hub, currently consisting of over 600 FinTech companies in a market estimated to be worth over US $8 billion (Anand & Shah, 2017). The Indian economy does therefore provide excellent conditions for studying the largely unexplored phenomena of FinTech companies and their relation to the issue of financial exclusion in an developing economy.

1.2.2.1 Governmental initiatives towards financial inclusion in India

The Indian government has implemented a number of initiatives and policies directed towards promoting financial inclusion in India, in which also banks have been encouraged to increase their provision of services and products to the financially excluded segment (Shankar, 2013). In 2006, a programme was launched by the Reserve Bank of India (RBI) with the aim to connect all households with bank accounts, and thereby induce a culture of saving into the rural areas (Goedecke, Guérin, D'Espallier & Venkatasubramanian, 2018). In 2014, the Indian government introduced an initiative called Pradhan Mantri Jan-Dhan Yojana (PMJDY), which was aimed at providing the population with free bank accounts that could be opened with zero balance and did not require as much documentation as previously required (Government of India, 2016).

Additionally, in an attempt to promote the transition towards a cashless society, the Indian government went through with the so-called *demonetisation* of India, which involved the sudden removal of the two largest banknotes in the Indian currency, that at the time made up of 85% of the total value of Indian notes (Schueth & Moler, 2017). There are several indications that India is on the right path towards financial inclusion (Neelamegam, 2016), however, the process has nevertheless been slow, and questions have been directed towards how much impact the actions taken have actually had on financial inclusion (Nanda & Kaur, 2017). Despite the undertaken initiatives, large parts of the population still use informal alternatives (Goedecke et al., 2018), and the amount of financially included is still low (Nanda & Kaur, 2017).

1.2.3 Problem Background Summary

Before presenting the purpose and research question of the study, a brief summary of the problem background will be provided. Financial exclusion is a worldwide problem affecting low-income individuals and MSMEs in developing economies in particular. Although governmental initiatives and microfinance institutions have aspired to reduce the level of financial exclusion, and to thereby improve overall welfare, the progress towards financial inclusion has been slow. Recent advancements in digital technologies have however given rise to the so-called FinTech sector, which leverages new technologies to provide financial products and services. At the forefront of this sector are the FinTech companies, who focus on building new business models around these new technologies in order to provide financial products and services. Due to the digital technologies and new business models that these FinTech companies employ, they are now being described as a potential solution to the problem of financial exclusion. However, the research on FinTech is yet shining with its absence, particularly in the context of financial inclusion. With the novel business models of FinTech companies being at the centre of the emerging FinTech sector, a need to investigate how these business models relate to financial inclusion emerges, which is supported by research callings from recent studies on the BOP as well as on financial inclusion. Lastly, as a result of having a large financially excluded population and only progressing slowly towards financial inclusion despite it being placed high on the political agenda, while simultaneously emerging as a global FinTech hub, India provides a conducive empirical setting in which to study the topic.

Thus, having outlined the key role that FinTech companies potentially might have for the improvement of financial inclusion and the lack of academic research within this area, as well as having presented the Indian economy as a highly relevant empirical setting to explore this topic in, we arrive to the purpose of this study, which will be presented in the following section.

1.3 Purpose and Research Questions

The purpose of this study is to increase the understanding for how, and to what extent, FinTech companies could improve financial inclusion in developing economies, and to thereby contribute to the literature on FinTech in the context of financial inclusion. The study will further make a contribution to the general and scarce stream of FinTech literature, as well as to the stream of BOP literature, as a need for studies on industry-specific solutions has been identified in previous research. In the sense that the study aims to provide new insights into a relatively unexplored topic, the purpose of the study is of an explorative nature. Understanding how FinTech companies will impact financial inclusion is of substantial importance for policy makers and regulators, as they need to balance the increasingly pressing issue of FinTech regulation with the need for effective policies for financial inclusion, but also for private actors aspiring to improve financial inclusion. Based on the background and the purpose of the research, one main research question has been formulated and follows as:

- *How could FinTech companies contribute to the improvement of financial inclusion in the Indian economy?*

In order to answer the main research question, two sub-questions have been formulated:

- *How do Indian FinTech companies' business models account for the barriers to financial inclusion?*

- *What will the main challenges for Indian FinTech companies to improve financial inclusion be?*

1.4 Scope and Delimitations

In terms of scope, this study investigates how FinTech companies could contribute to financial inclusion in the context of India, by drawing upon the literature on the BOP, financial inclusion, and business models. The stream of literature on social innovation was also initially considered to inform the research. However, as the researchers believed the that FinTech companies likely affect financial inclusion without explicitly aiming to provide a social innovation or a social good, the centrality of initiatives being explicitly aimed at social innovation in the literature on social innovation was deemed as unfit for the study. In terms of the literature on the BOP and on financial inclusion that was used to inform the research, the main focus was placed on the difficulties of providing services and products to the BOP and the financially excluded respectively identified in these streams of literature, as it is these difficulties that underline the entire purpose of the report, and also as the inductive approach applied by the researchers to study the novel topic of FinTech companies renders the need for exploring other areas of these literature streams, e.g. different kinds of BOP innovation or global initiatives towards financial inclusion, unnecessary. The study does then solely aim to investigate how FinTech companies relate to these specific problems and it does not address other general challenges or opportunities within the FinTech sector. Furthermore, as a face-to-face mode of interviewing was preferred, and as time and resource limitations restricted the researchers' ability to travel to different locations to meet with FinTech companies, the study further mainly focuses on companies located in the city of Bangalore, India. However, one company outside of Bangalore was included in the study and was interviewed via Skype. Furthermore, as the topic under study is financial inclusion, only companies that had some visible connection to the financial inclusion of individuals or small businesses were included in the study. The study was moreover undertaken under the time and resource constraints of a master thesis project, and therefore only a smaller number of interviews were possible to be undertaken.

1.5 Thesis Disposition

To conclude the introductory chapter, a description of the thesis' disposition will be provided. The first chapter of the thesis, *Introduction,* ends here after having presented the problem background for the research, the purpose and research questions, and the scope and delimitations of the study. Chapter two, *Theoretical Framework,* then reviews existing literature in academic fields relevant to the research topic in order to develop a theoretical framework that has been used to inform the study. Chapter three, *Methodology,* describes the methodology that has been applied throughout the research by presenting the research strategy, the research design, the research process, and the research quality concerns. Chapter four, *Empirical Findings,* then presents the findings of the study by describing the themes that emerged in the collected data. Chapter five, *Data Analysis,* then critically analyses the empirical findings in light of the theoretical framework. Lastly, the sixth chapter, *Conclusion,* attempts to answer the main research question and its two sub-questions, and then presents the study's implications for policy. The concluding chapter ends by stating the limitations of the research and by making suggestions for future research to explore further.

2. Theoretical Framework

The following chapter aims to provide a theoretical framework that will inform the research by briefly reviewing existing literature on topics that are relevant for answering the proposed research questions.

In order to answer the research questions, several streams of literature have been used as a basis for developing a theoretical framework. Firstly, due to the existing correlation between poverty and financial exclusion, it is believed by the authors that to fully understand the barriers of financial exclusion, one also has to take the more general challenges of providing services and products to consumers in the BOP into account, in order to provide a deeper understanding for these consumers' behaviour and needs. Therefore, the literature review will begin with a section on what challenges existing literature has identified for providing services and products to the BOP. Secondly, the literature on financial inclusion has been consulted in order to better understand the more specific challenges of providing financial services and products to the financially excluded. Thirdly, to understand the phenomenon of FinTech and the nature of FinTech companies, the scarce literature on FinTech has been reviewed in order to provide a definition of the concept. Lastly, in order to clarify the unit of analysis of this research, the literature on business models has been consulted to provide a definition of the concept as well as to describe its constituents.

2.1 Serving the Bottom of the Pyramid (BOP)

In order to better understand the challenges of providing financial services and products to the financially excluded segment, it is necessary to first understand the more general challenges of providing services and products to the poor, as the state of being financially excluded has been described by several academics as a feature of the poor segments of the population (e.g. Carbo et al., 2007; Koku, 2015). A field of literature that has specifically been addressing this issue is the literature on the *base* or *bottom* of the economic pyramid (BOP). Prahalad (2012) referred to the BOP market as the four billion people across the globe who live on less than US $2 a day, but income levels ranging from US $ 1.25 a day and up to US $10 a day have commonly been used in economics literature to define poverty (Yurdakul, Atik & Dholakia, 2017), and in the BOP literature following Prahalad's definition, US $1500 to US $2000 per year have commonly been used as well (Kolk et al., 2014).

The concept of the BOP was first described by renown BOP-academic C.K. Prahalad in the late 1990s and has since gained a great deal of attention in management research, with a large number of studies exploring the specific characteristics of the BOP and the challenges and opportunities associated with it. The main idea of the BOP concept prevalent in the stream of literature that has followed Prahalad's initial research is the idea that financially profitable activities can alleviate poverty through the process of innovating radically new business models, products and services, tailored to the needs and requirements of the BOP. Although the early literature on the BOP initially put large Western multinational enterprises (MNEs) in focus of this process, the BOP concept has evolved and does now also refer to innovative activities aimed towards the BOP segment initiated by a wide range of actors, including small and local companies and entrepreneurs, joint enterprises with not-for-profit organisations (NGOs), and government agencies. (Kolk et al., 2014)

So, what are then the challenges of providing services and products to the BOP? The BOP literature has emphasised four general areas which need to be focused on for businesses to be able to successfully provide services and products to the BOP segment (Andersson & Billou, 2007; Prahalad, 2012). These four areas are the equivalents of the 4Ps of marketing in traditional marketing literature, but are instead referred to as the 4As, first developed in Anderson and Billou (2007) and later modified in Prahalad (2012). In short, the 4As, as originally formulated by Anderson and Billou (2007), stand for the essential needs of: (1) creating *awareness* of the service or product among the BOP, (2) ensuring *availability* of the service or product to the BOP, (3) ensuring the *affordability* of the service or product to the BOP, and (4) focusing on gaining *acceptability* of the service or product amongst the BOP. Each of these four key focus areas for successfully serving the BOP comes with its own set of challenges, and these will be explored in the following sections.

2.1.1 Awareness

In order to succeed in serving the BOP, an elementary prerequisite is that the BOP consumers are aware of the service or product. However, there are several challenges of creating awareness in the BOP segment. Firstly, traditional advertising media such as TV, radio, and newspapers are not accessible or affordable to a large part of the BOP, and many live in rural areas which are more difficult to reach with basic physical advertising such as billboards, and companies must therefore find alternative communication channels to reach the BOP (Anderson & Billou, 2007; Chikweche & Fletcher, 2012). A critical concern is also that it is common for BOP consumers to be illiterate, which makes it difficult or not possible for them to understand service and product offerings (Viswanathan & Sridharan, 2012). Several studies have pointed towards accessing informal social networks and using word of mouth communication as one of the most effective ways to raise awareness of the service or product among the BOP (Chikweche & Fletcher, 2012; Weidner, Rosa, & Viswanathan, 2010). The importance of informal social networks to reach the BOP is derived from the findings that the BOP is unusually rich on social capital (Viswanathan, Sridharan, Ritchie, Venugopal, & Jung, 2012). Social capital is defined as the norms and networks that enable collective action among people (Woolcock & Narayan, 2000). This entails that BOP consumers are highly interdependent on each other, which might stem from the difficulties of living with a high degree of uncertainty in life, as is common in the BOP (Viswanathan et al., 2012). As the dominant form of communication in these social networks is mainly oral, partly because it overcomes the text illiteracy barrier, innovative ways to orally communicate service and product offerings are needed (Viswanathan et al., 2012).

2.1.2 Availability

One of the major challenges in terms of making services and products available for the BOP to acquire and use is undeveloped or non-existing distribution channels between the business and the BOP consumers (Anderson & Billou, 2007), which is partly caused by the fact that the BOP consumers are largely dispersed (Gollakota, Gupta & Bork, 2010). For example, India alone has around 627.000 villages of which many are isolated and only accessible via simple and underdeveloped dirt roads (Anderson & Billou, 2007). This lack of infrastructure in developing countries is also apparent in other areas than transport, such as financial infrastructure, e.g. bank offices, automated teller machines (ATMs) (Prahalad, 2012), and communication, electricity and sewage infrastructure (Viswanathan & Sridharan, 2012). Due to the lack of infrastructure, distribution system innovations are often required in order to reach the BOP (Chikweche & Fletcher, 2012), and Viswanathan and Sridharan (2012) state that there is often a need to find ways to leapfrog the lack of infrastructure or to leverage the infrastructure that exists. An approach to distribution that has proven to be critical to access the BOP is the use of informal distribution channels such as market stalls, tuck shops and small franchises, as these often are highly integrated into the social networks of the BOP (Chikweche & Fletcher, 2012). Furthermore, many BOP consumers cannot, due to their low disposable income, or because they often are paid on a daily or weekly basis, afford larger one-time expenses, e.g. electricity generators (Anderson & Markides, 2007). Therefore, in order to make more expensive products or services available to the BOP, alternative financing methods are often required such as usage fees (Chikweche & Fletcher, 2012), renting, or shared access options (Karnani, 2007; Gollakota et al., 2010).

2.1.3 Affordability

Recognising that the defining characteristic of the BOP is its highly limited income, ensuring that the product or service is affordable to the BOP is one of the most central issues of serving the BOP. Due to their low income, the BOP consumers are highly price sensitive, leading to the majority of their income being spent on basic necessities (Anderson & Billou, 2007; Karnani, 2007). Acknowledging that profit is a necessary key aspect of BOP innovation, Prahalad (2012) expressed this foundational focus on affordability as a need for businesses to move from the traditional logic of *Cost + Profit = Price* to the logic of *Price - Profit = Cost.* This logic entails that in order for businesses to provide affordable products and services to the BOP, the factor businesses have to focus on is cost. Indeed, substantial cost reductions are often necessary to be able to meet the requirements of the BOP (Chikweche & Fletcher, 2012). The costs of serving the BOP can however be significant. Karnani (2007) argue that marketing and distribution costs are often high, as the rural BOP consumers are often highly dispersed and infrastructure to reach them is poor. Karnani even goes as far as stating that due to the low income of the BOP and the costs of serving it, there are no profits to be made at all in the BOP. Therefore, developing a smart cost structure with low fixed costs and a low amount of working capital is a great challenge when developing products and services for the BOP (Prahalad, 2012). Gollakota et al. (2010) even suggest that this challenge is so significant that even global cost leaders do not have low enough cost structures to serve the BOP. Prahalad (2012) further argues that in order to be able to lower the cost structure and be able to provide affordable products and services to the BOP, it is essential to establish collaborative ecosystems where the fixed costs and working capital needs can be spread amongst several actors. Additionally, focusing on high volumes and scalability could ease the problem of keeping costs down (Chikweche & Fletcher, 2012; Prahalad, 2012).

2.1.4 Acceptability

The last area of concern that needs special attention for succeeding in the BOP market is to gain acceptability for the service or product. To increase the likelihood of acceptability it is essential to fully understand the unique needs of the BOP and to adjust the service or product accordingly (Anderson & Billou, 2007; Gollakota et al., 2010). Anderson and Billou (2007) exemplified the potential consequences of a mismatch between BOP needs and product design by describing how Haier Group in China had trouble gaining acceptance for their washing machines among the BOP as these consumers used the washing machines not only to wash clothes, but also to wash other things such as vegetables, which the machines were not designed for and eventually caused their breakdown. Radjou and Prabhu (2012) argue that in order for companies to fully understand the unique needs of the BOP, collaboration with NGOs and governmental institutions who might possess more knowledge about the BOP is often needed. Furthermore, the needs that are most prioritised by the BOP are often critical life needs of a basic survivalist nature, whose fulfilment therefore are valued highly (Viswanathan & Sridharan, 2012). Another challenge associated with gaining acceptance for the service or product is to be able to provide quality at a low cost. Having a low income does not necessarily mean that the consumer wants quality-compromised low-cost products, and thus, focusing on raising quality in low-cost products instead of increasing marketing of standard low-cost products has proven to be a successful concept (Anderson & Billou, 2007). Support for this argument is found in Chikweche and Fletcher (2012) who found that as BOP consumers place a high importance in the purchases they make, they are not willing to accept higher risks regarding the safety of products just to save on price. Lastly, Viswanathan and Sridharan (2012) state that the BOP is also characterised by deeply rooted consumer product habits, which could make them avert towards new ways of consumption. Therefore, they further argue that emphasis is put on the need for introducing new innovations via existing product infrastructure when serving the BOP.

2.1.5 Ethical Concerns

Lastly, Karnani (2007) also brings up some ethical concerns of targeting BOP consumers. As the BOP consumers are often poorly informed, illiterate and lacking in education, Karnani argue that BOP initiatives and marketing might persuade the BOP consumer to spend money on services or products that would have been better spent on other products such as health or education. For these reasons, understanding the context in which the BOP consumers make their choices is an issue that needs careful consideration for businesses serving the BOP, in order to avoid mere exploitation of the segment (Gollakota et al., 2010).

2.2 Financial Inclusion

One of the more specific problems common among the individuals and businesses in the low-income segments of the population is the problem of being financially excluded (Carbo et al., 2007; Koku, 2015). More specifically, financial exclusion refers to the state of having a highly limited access, or no access at all, to basic formal financial services. This lack of access to basic formal financial services is a concern both for individuals and for MSMEs, particularly in the developing parts of the world (Manyika et al., 2016). Today, as much as 38% of the world's adult population do not possess a basic bank account (Demirguc-Kunt et al., 2017), which means that they instead have to rely on informal alternatives, and over 200 million MSMEs cannot access the credit they need (Manyika et al., 2016). The opposite to financial exclusion is then called financial *inclusion* and is defined by The World Bank (2017) as follows: "*[T]hat individuals and businesses have access to useful and affordable financial products and services that meet their needs - transactions, payments, savings, credit and insurance - delivered in a responsible and sustainable way*" (para. 1). Adding to this definition, it is emphasised that these financial services are formal and provided by regulated financial institutions (Demirguc-Kunt et al., 2017).

Increasing financial inclusion could thus incur a number of benefits to developing economies. Firstly, it could contribute to the reduction of poverty by enabling investments for the future in areas such as education and business; by enabling the management of financial risks; and by smoothening consumption behaviour. Secondly, financial inclusion has indicated to encourage job creation. Thirdly, it helps stabilize the overall economy by increasing the use of financial services provided by formal and regulated institutions instead of services provided by informal unregulated actors. Lastly, it helps in promoting entrepreneurship as it increases access to finance, which also increases creativity and risk taking. It is however not until recently that the topic of financial inclusion has been studied in more detail, as little to none data has been available in the past. Since the early 2000s, an increasing amount of studies have nevertheless been conducted within the field, but it is still remains a largely unexplored research field. (Demirguc-Kunt et al., 2017)

2.2.1 The Basic Elements of Financial Inclusion

In order for financial inclusion to be achieved, the literature on financial inclusion has generally discussed the importance of having formal access to a few foundational types of financial services. Each of these will be discussed briefly below.

2.2.1.1 Storing and managing money

At its most basic level, financial inclusion has been described as having access to a basic bank account, as many other financial services build upon having access to such (Neelamegam, 2016). Saving money is crucial for being able to manage future expenditures such as emergencies, education and investments in businesses, and this is especially true in developing countries where public health systems are underdeveloped, and the level of social security generally is low (Goedecke et al., 2018). Saving money in a basic bank account has been argued to possess several advantages over saving money in cash; it is more protected from theft as a bank account is more secure than the option to save money under the mattress; it could improve money management by reducing the likelihood of impulse spending as it becomes harder to access the money; and, it can help to economically empower women whom are particularly affected by financial exclusion in developing economies, as the account can be confidential and controllable so that friends and family cannot reach the funds without permission (Demirguc-Kunt et al., 2017).

2.2.1.2 Credit

Another central aspect of financial inclusion is to have access to formal credit. Access to credit is important to be able to make investments that could greatly improve the financially excluded segment's livelihoods. Individuals and businesses who are not be able to access credit from traditional financial institutions might still be able to access credit from informal alternatives. These alternatives may however be very limited in terms of what amount can be borrowed, and such loans are also often offered at worse terms as compared to formal credit alternatives (Demirguc-Kunt et al., 2017). In 2014, only 42% of the global adult population had borrowed money during the last 12 months, and in developing countries, borrowing money from friends and family was three times more likely than borrowing money from a financial institution (Demirguc-Kunt et al., 2017). Informal lending in the form of loan sharks is also more common in developing economies. For example, in 2014, people in the developing economies in South Asia were over 10 times more likely to lend money from a private informal lender than people in high-income OECD countries were (The World Bank, 2018).

2.2.1.3 Money transfers & payments

Lastly, an important element of financial inclusion is also to be able to make payments and money transfers, and in particular to be able to do so digitally. Both senders and receivers benefit from making digital payments and transfers due to its increased speed, efficiency and reduced cost in comparison to physically moving cash. For example, using cash often requires travelling long distances to a bank or a money transfer operator just to transfer money or make a payment of a bill. By making payments and money transfers digitally, the time and money saved can instead be used for more important tasks of everyday life, which is critical for the financially excluded. Another benefit of transferring money digitally is the added security it brings, as the process of sending and receiving money in cash is associated with a higher risk of being exposed to crime. Digital transactions are furthermore easier to overlook and trace, and hence, thereby also more transparent. This can ensure that the receivers of payments and money transfers actually receive the amount that was intended for them, without any money being leaked to middlemen along the way.

Lastly, using digital payments and transfers can help people without a credit history build a credit profile as a digital ledger can be kept of their bill payments for example, which then can be used to access credit and receive better loan terms. Even though technology in transferring money and payments has developed quickly in recent years, developing countries are still lagging behind in adopting digital payments and money transfers, and are thus still largely dependent on the physical transferring of cash. In fact, only 62% of account holders in developing economies had received or sent at least one digital payment during 2014, compared to a figure of 95% in OECD economies. Additionally, 59% of the account holders received their wage in cash, and as much as 91% of sales in agricultural goods were paid for with cash. (Demirguc-Kunt et al., 2017)

2.2.2 Barriers to Financial Inclusion

The literature on financial inclusion has identified a number of barriers to financial inclusion that need to be addressed in order to enable the financially excluded segment to access formal financial services and products. Shankar (2013) argues that the barriers to financial inclusion could generally be divided into demand and supply-side barriers, as the barriers can be derived from characteristics of the financially excluded individuals and businesses, but also from the supply side of financial services and products (see Figure 2.1).

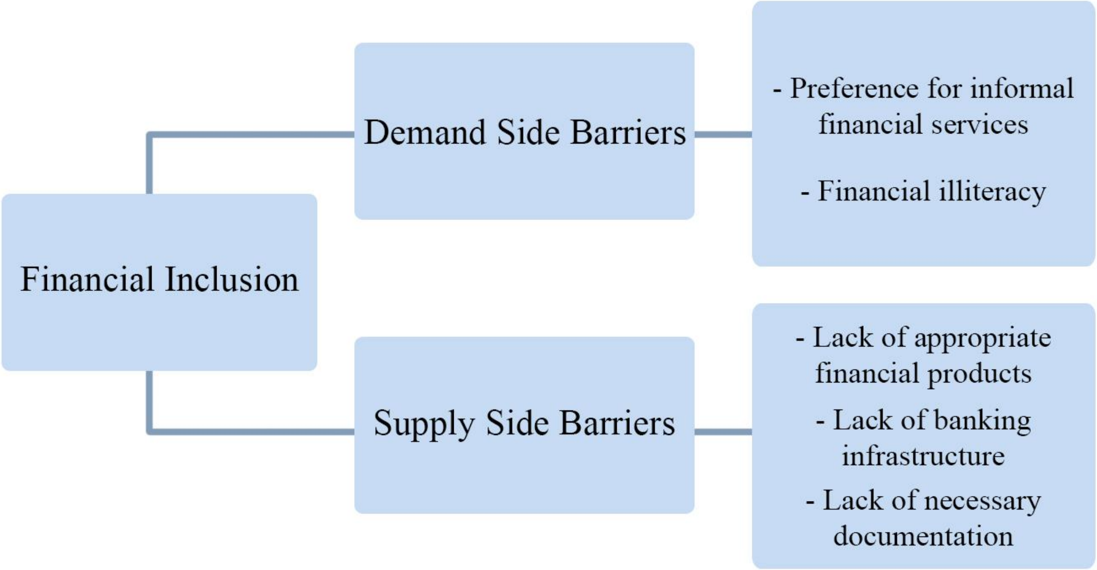

Financial Inclusion
Demand Side Barriers
- Preference for informal financial services
- Financial illiteracy
Supply Side Barriers
- Lack of appropriate financial products
- Lack of banking infrastructure
- Lack of necessary documentation

Figure 2.1. *Barriers to financial inclusion. (Adapted from "Financial inclusion in India: Do microfinance institutions address access barriers?", S. Shankar, 2013, ACRN Journal of Entrepreneurship Perspectives, 2(1), p. 64.)*

2.2.2.1 Demand-side barriers

A preference for informal financial services and products

Generally, there exist great difficulties in achieving acceptance for formal financial services in the financially excluded segment due to psychological and cultural factors such as a mistrust towards banks, which therefore could lead to self-exclusion from formal financial services (Shankar, 2013). Indeed, Goedecke et al. (2018) find an overall reluctance to formal saving among the financially excluded and state that this is largely due to cognitive and psychological resistances such as a lack of control, cognitive dissonance and loss-aversion. They also state that another reason for such an aversion to saving could be a social pressure to support friends and family, which takes money from the household that otherwise could have been saved. Goedecke et al. (2018) also state that it is common among the financially excluded to extend private loans to one's closest circle, which reduces the reliance on formal loans as well. These findings are further supported by Martínez, Hidalgo and Tuesta (2013) who find a preference for informal savings and credit, which is explained by a distrust towards formal financial institutions while simultaneously being familiar and comfortable with informal alternatives, and by Demirguc-Kunt et al. (2015) who found that lack of trust towards financial institutions was a major barrier among the financially excluded to use the formal system for saving money. Goedecke et al. (2018) further question the demand for financial integration among the financially excluded, as social networks can affect how dependent people are of these services. If cash is used throughout a community for payments and investments, then the need for a bank account is also lower.

Financial illiteracy

In their literature review of the financial inclusion literature, Rajeev and Vani (2017) emphasised financial illiteracy among the financially excluded as a major demand-side barrier to financial inclusion and stated that the process of increasing access to financial services is largely ineffective unless the issue of financial illiteracy is simultaneously addressed. Martínez et al. (2013) describe financial literacy as follows:

> (F)inancial literacy refers to the ability to evaluate and take the right financial decisions; to know where and how to look and choose a financial product that adapts to the user's financial needs, as well as the understanding of rights and obligations imposed by a contract for a financial product or service. (Martínez et al., 2013, p. 3)

Martínez et al. (2013) also state that the preference for informal financial services might partially be explained by financial illiteracy, as scarce knowledge of formal financial services and products leaves the financially excluded segment unaware of the benefits of such services. A recent study conducted in the financially excluded segment in India further showed that financial illiteracy is a common problem both in rural as well as urban areas (Neelamegam, 2016). The problem of financial illiteracy does then create significant challenges for providers of financial services and products, which require information sharing and education to overcome (Rajeev & Vani, 2017). Financial education could thereby greatly improve financial literacy. A major barrier for the providers of financial services and products is then to ensure that the financially excluded segment is able to understand the product and service offerings and the benefits they could incur, and private companies have also been described as potentially important actors in educating the financially excluded segment and thus further increase financial literacy (Rajeev & Vani, 2017).

2.2.2.2 Supply-side barriers

Lack of appropriate financial products

Similar to the issue of a lack of suitable products for the BOP segment identified in the BOP literature, Shankar (2013) states that a supply-side barrier to financial inclusion is that existing financial services and products are not aimed towards the poor, but are instead created for people with higher income, and hence, the unique needs of the financially excluded segment are not taken into consideration. Shankar further state that this mismatch between offerings and needs could for example be a minimum balance requirement in a bank account, or a requirement of frequent usage, which often cannot be fulfilled by the financially excluded segment.

Lack of banking infrastructure

A second supply-side barrier to financial inclusion is, as also discussed in the BOP literature, that the existing banking infrastructure is often underdeveloped in the areas where the financially excluded segment resides, i.e. most commonly rural areas, which makes it difficult to reach the highly dispersed financially excluded segment with financial services and products. Distances between the financially excluded and bank branches or automated teller machines (ATMs) are then often large, and thereby also difficult for the financially excluded to reach. (Shankar, 2013)

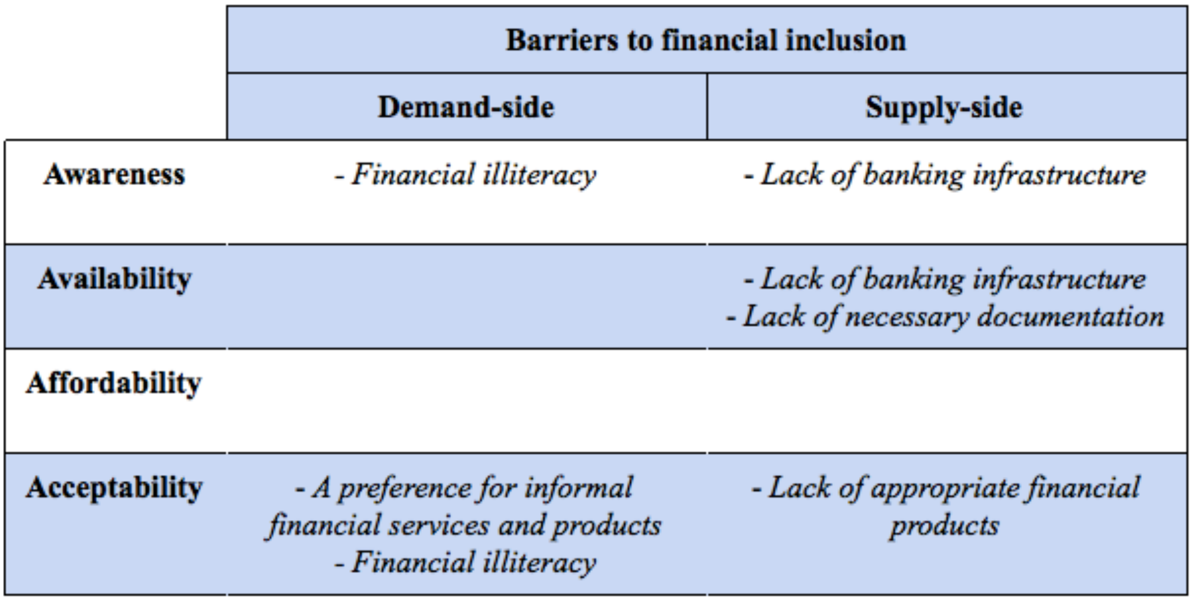
Lack of necessary documentation

Lastly, Demirguc-Kunt et al. (2015) and Shankar (2013) argue that a lack of necessary documentation among the financially excluded is as a major supply-side barrier for the financially excluded to access formal financial services. Due to security and legitimacy reasons, financial services and products often require the provision of a number of formal documents, which could be difficult for the financially excluded to provide (Demirguc-Kunt et al., 2015; Shankar, 2013), especially for individuals working in rural areas or in informal sectors where they have no formal proof of wages or domiciles (Demirguc-Kunt et al., 2015).

2.3 Financial Inclusion and the 4As

As financial exclusion has been described as a characterising feature of the low-income segments, the barriers to financial inclusion could usefully be understood in the context of the 4As framework of providing services and products to the BOP. As the topic of financial inclusion has mainly been addressed in the economics literature, integrating the barriers to financial inclusion identified in the economics literature into the 4As framework of the BOP literature, the dynamics of addressing the issue of financial exclusion could be better understood from a business perspective. Relating the identified barriers to financial inclusion to the 4As framework, this study makes the assumptions that the identified demand-side barrier of a preference for informal financial services mainly concerns the *acceptability* of formal financial services; that the demand-side barrier of financial illiteracy relates to the *acceptability* and *awareness* of formal financial services; that the supply-side barrier of a lack of financial services and products adapted to the needs of the financially excluded concerns the *acceptability* of formal financial services; that the supply-side barrier of inadequate banking infrastructure relates to the *availability* and *awareness* of formal financial services; and that the supply-side barrier of a lack of necessary documentation mainly concerns the *availability* of formal financial services.

Sorting these barriers to financial inclusion identified in the literature on financial inclusion into the 4As framework (see Table 2.1), it is possible to see how we can attain a richer analytical lens by combining the two, as the barriers identified in the financial inclusion literature only touches upon specific parts of the areas identified in the BOP literature as being general challenges of serving the low-income segment. For example, the issue of affordability of financial services and products is not focused on at all in the financial inclusion literature but is instead a prerequisite that is assumed to be fulfilled. This points to the need of including the BOP literature, which highlights the challenges of fulfilling these foundational assumptions, when studying how FinTech companies could impact financial inclusion, as such requirements also need to be fulfilled if FinTech companies are to improve financial inclusion successfully. Thus, when referring to the 4As henceforward, the 4As will also encompass the barriers to financial inclusion identified in the financial inclusion literature as sorted in the table below (see Table 2.1).



	Barriers to financial inclusion	
	Demand-side	**Supply-side**
Awareness	*- Financial illiteracy*	*- Lack of banking infrastructure*
Availability		*- Lack of banking infrastructure* *- Lack of necessary documentation*
Affordability		
Acceptability	*- A preference for informal financial services and products* *- Financial illiteracy*	*- Lack of appropriate financial products*

Table 2.1. *Barriers to financial inclusion in the 4As framework*

2.4 FinTech

Although having gained significant attention from industry and news media in recent years, only a limited number of academic articles have been produced on the topic of FinTech, and thus little concretisation of what constitutes the term *FinTech* has taken place. Several different terms have also been used to refer to the concept, among them *Fin-tech*, *FinTech* and *Fintech* (Gomber et al., 2017). In order to be able to discuss the topic of FinTech, it is therefore necessary to start by defining the term. By reviewing over 200 articles from both academia and practice referring to the term *FinTech*, Schueffel (2016) attempted to provide one of the first comprehensive and scientific definitions of the term FinTech. Focusing on the commonalities of the definitions of FinTech that have been provided in these articles, Schueffel ended up with the following definition: "*FinTech is a new financial industry that applies technology to improve financial activities*." (Schueffel, 2016, p.46). He did however acknowledge that the word “new” will soon need to be removed from this definition as the industry ages, but that the rest of the definition will remain unchanged. As the review undertaken by Schueffel is yet the most comprehensive definition of the term FinTech, the definition provided by him will be used for the purpose of this report.

Having defined the term FinTech, it is possible to take a closer look at the different actors within this new industry sector. Gomber et al. (2017) distinguish between traditional financial institutions and so called *FinTech companies*, which in turn consists of start-ups and established IT companies that enter into the financial services industry. Nicoletti (2017) further argues that the raison d’être for FinTech companies is in fact the inefficiencies found in traditional financial institutions. FinTech companies do also have a greater ability to unbundle financial services compared to traditional financial institutions, enabling consumers to easily combine different services from different providers (Lee & Shin, 2018). These new companies have therefore now emerged as increasingly formidable competitors to established banks and financial institutions by serving unfulfilled needs in overlooked parts of the market with new services and products, and by leveraging new technologies to create new opportunities (Gomber et al., 2017). Gomber et al. (2017) argue that FinTech companies mainly operate within one or more of six areas; (1) digital financing, (2) digital investments, (3) digital money, (4) digital payments, (5) digital insurances, and (6) digital financial advice. These six functions will be described briefly below.

Digital financing includes all forms of digitally providing financial capital, and notable types for FinTech companies are crowdfunding, leasing, factoring and invoicing. The large category crowdfunding can further be divided into four sub-categories, namely donation-based crowdfunding, rewards-based crowdfunding, crowdlending, and crowdinvesting. *Digital investments* refer to different forms of digitally supporting and arranging investment transactions, often by enabling the customer to use their own technology devices, such as smartphones, to do so. *Digital money* refers to digital currencies, i.e. currencies that only exist digitally and have no physical representation. Digital currencies are yet largely non-regulated, and control of the currency is often decentralised in large networks of creators. The most well-known digital currency is the cryptocurrency bitcoin introduced in 2008, which is based on blockchain technology. *Digital payments* includes all forms of payments that are made digitally, where mobile payment systems is one of the most prominent forms among FinTech companies. Mobile payments include the use of a mobile device to conduct a payment, and these types of payments have increasingly been used as a substitute for cash, check, and credit card payments. Included in this category are also peer-to-peer (P2P) payment or money transfer systems such as PayPal, and digital wallets where electronic money can be stored and managed. In *digital insurances*, FinTech enables a more direct relationship between customer and insurer, and data analytics is used to assess risk. The area of digital insurances has however received little to no attention in research (Gomber et al., 2017). The area of *digital financial advice* concerns digitally enabled reviews, comparisons and recommendations of different financial services. These include review and comparison platforms, online communities and algorithm-driven robo-advisory. (Gomber et al., 2017)

Furthermore, FinTech companies employ a number of technologies to enable their innovations in financial services and products. The most prominent ones are blockchain technology, peer-to-peer (P2P) technology, big data analytics, near field communication (NFC) technology, and social media networks (Gomber et al. 2017). Nicoletti (2017) also highlight Internet of Things (IoT), cloud computing, artificial intelligence (AI) and robotics as important technologies for FinTech companies. Of particular importance for enabling the deployment of these key technologies are also technologies such as security technologies, intuitive user interfaces, and mobile device technologies (Gomber et al., 2017).

2.5 Business Models

Having set the business model of FinTech companies as the unit of analysis, a definition of the term *business model* is in order to enable a richer analytical lens. The literature on business models emerged as an area of interest for academics during the 1990s (Osterwalder, Pigneur & Tucci, 2005; Zott, Amit & Massa, 2011), and has since grown to become a common unit of analysis (Zott et al., 2011). Chesbrough and Rosenbloom (2002) further highlighted the business model's essential role for being able to capture value from innovative new technologies. However, in their literature reviews of the business model literature, Zott et al. (2011) and DaSilva and Trkman (2014) concluded that the term *business model* is still an ambiguous term with varying definitions existing in current literature. Therefore, in an attempt to clarify, and make the concept more manageable for practitioners, Osterwalder and Pigneur (2010) developed the *business model canvas*, which is a conceptual tool that enables the visualisation of business models by breaking it down in to nine basic building blocks (see Figure 2.2).

Osterwalder and Pigneur (2010) define the business model as "*the rationale of how an organization creates, delivers, and captures value*" (p.14), and have based the nine building blocks of their business model canvas upon common themes identified in the business model literature (Osterwalder et al., 2005). Due to the strength the simplicity of the business model canvas brings as a conceptual tool, the business model canvas could then beneficially be applied in this study to understand the unit of analysis, namely the business model. The nine building blocks of the business model canvas are then: (1) customer segments, (2) value propositions, (3) channels, (4) customer relationships, (5) revenue streams, (6) key resources, (7) key activities, (8) key partnerships, and (9) cost structure (Osterwalder & Pigneur, 2010). Each of these nine building blocks will be discussed briefly below.

2.5.1 Customer Segments

The customer segments block describes who the business' customers are, and these are grouped into one or more customer segments depending on their needs, their willingness to pay for different features, their profitability, what distribution channels that are required to serve them, and what type of customer relationship that is needed. The customers are central to any business model and it is essential to construct the business model after the needs of the target customer segment. (Osterwalder & Pigneur, 2010)

2.5.2 Value Proposition

The value proposition of a business model defines the value that the business offers to its customers. The value proposition of the business' products and services can be described as the benefits the customer enjoy from having a need satisfied or a problem solved. Osterwalder and Pigneur suggest several ways that value can be offered to customers, namely through: offering superior performance and/or design, customising the product/service after specific customer needs, lowering the price and/or risk, create and satisfy new needs (e.g. cell phones), increasing accessibility, making the product/service easier to use, helping customers lower their own costs, or providing an attractive brand. (Osterwalder & Pigneur, 2010)

2.5.3 Channels

The channels block refers to the ways that the business communicates with its customers and how it distributes and sell its products and services. Choosing the right channels to do so can have a significant impact on customers awareness of the business' products and services, as well as on their ability to access them. Osterwalder and Pigneur state that channels can either be owned by the business itself or by a partner organisation, and that there are five stages of channels that need to be considered. These are to (1) raising awareness of the product/service, (2) helping customers understand and assess the value proposition, (3) making the product/service available for purchase, (4) delivering the value proposition to the customer, and (5) providing of after-sales support. (Osterwalder & Pigneur, 2010)

2.5.4 Customer Relationships

In order to retain existing customers, to acquire new customers, and to increase sales, the type of relationship a business has with its customers is imperative. The customer relationship directly affects how the customers experience the business and its products/services, and relationships can vary from fully automated self-service options to collaborative and attentive personal assistance. (Osterwalder & Pigneur, 2010)

2.5.5 Revenue Streams

The revenue streams block is concerned with how the business generates money from its customers. To do so effectively, it is essential that the business understands what it is that customers value in the product/service. The revenue streams can be based on either one-time or ongoing transactions, and the main revenue stream options suggested by Osterwalder and Pigneur are asset sale, licensing, renting, subscription, usage fees, brokerage fees, and advertisement. Included in the revenue stream block of the business model is also the choice of what pricing mechanism to use. Pricing could either be based on static variables or on changing market conditions. (Osterwalder & Pigneur, 2010)

2.5.6 Key Resources

In order to execute its business model, a business needs a number of different assets. The most important of these can be referred to as key resources and can be of either a physical, intellectual, human or financial nature. (Osterwalder & Pigneur, 2010)

2.5.7 Key Activities

Similar to the role of key resources, a business also needs to perform a number of activities to execute its business model, and the most important are then called key activities. Osterwalder and Pigneur categorise key activities into three categories, namely activities that relate to the production of the product or service, activities aimed at solving specific customer problems, and activities relating to platforms or networks issues when the business has a platform as key resource. (Osterwalder & Pigneur, 2010)

2.5.8 Key Partnerships

In order to maximise the performance of a business model, lower risk or acquire assets, it is often necessary for a business to establish partnerships with other parties. Such relationships could be cooperation between competitors, joint ventures, strategic alliances with non-competitors, or partnerships between buyers and suppliers. (Osterwalder & Pigneur, 2010)

2.5.9 Cost Structure

Lastly, the choices made in each of the previously mentioned building blocks of the business model all incur different costs. The cost structure block describes these costs and Osterwalder and Pigneur further state that every business can choose between being either cost-driven or value-driven. Value-driven businesses are less concerned with costs and do instead aim to generate a premium in exchange for increased value in their offering. The cost structure of the business model can furthermore be broken down into four considerations for business managers: fixed costs, variable costs, economies of scale, and economies of scope. (Osterwalder & Pigneur, 2010)

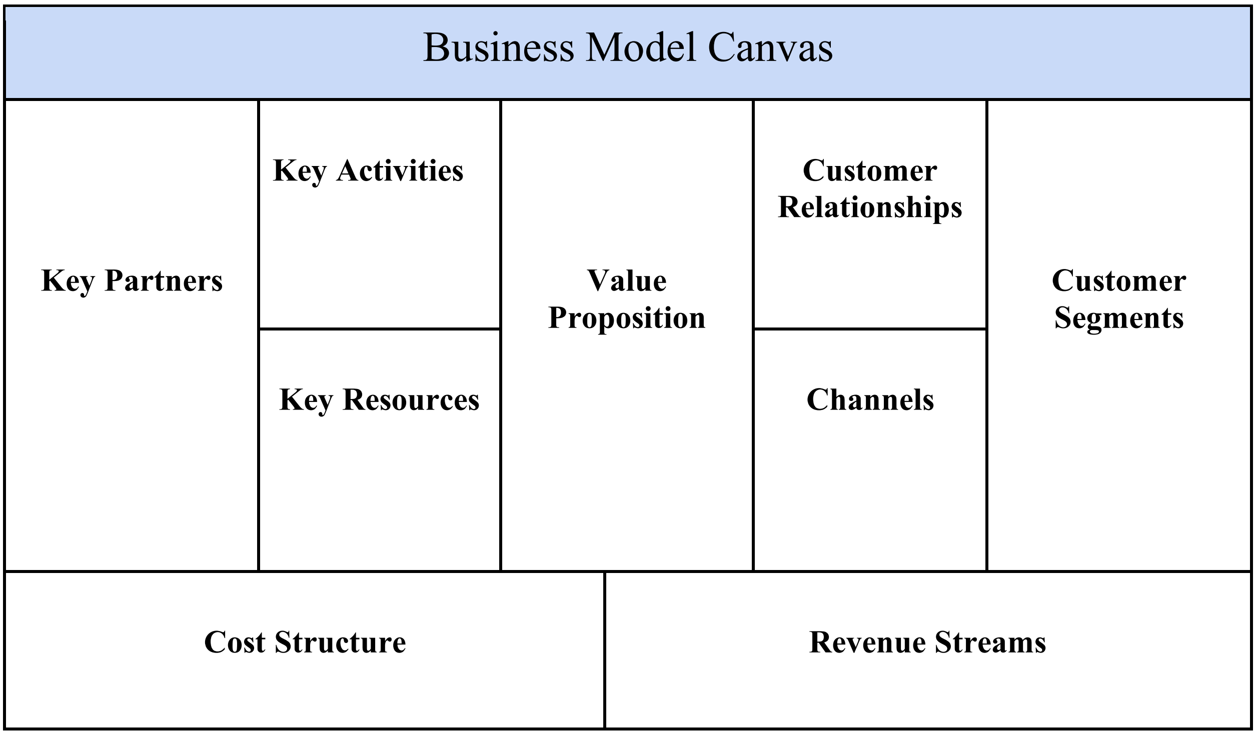

Business Model Canvas
Key Partners
Key Activities
Key Resources
Value Proposition
Customer Relationships
Channels
Customer Segments
Cost Structure
Revenue Streams

Figure 2.2. *Business model canvas. (Adapted from Business Model Generation: A handbook for visionaries, game changers, and challengers (p.18-19) by A. Osterwalder and Y. Pigneur, 2010, Hoboken, NJ: John Wiley & Sons)*

3. Methodology

In the following chapter the chosen methodology for the research is discussed by describing the research strategy, the research design, the research process, and the quality of the study.

3.1 Research Strategy

In order to select an appropriate research strategy, it is necessary to first determine the nature of the relationship between theory and research, as this relationship will heavily impact how the process of data collection and analysis should be undertaken. The nature of the relationship between theory and research could be either inductive or deductive. With an inductive approach, new theory is formed as the outcome of the research, whereas in a deductive approach, the aim is to test hypotheses based on already existing theory (Bryman & Bell, 2011). As the purpose and research questions of this study are of an explorative nature, and as the researchers without any preconceptions of the expected outcome aim to form new theory, an inductive approach is appropriate.

The substance and form of the research question will further inform the choice of whether to apply a qualitative or a quantitative research strategy. The use of a quantitative research strategy is appropriate when there is a need for statistically determining relationships between variables based on the researcher's hypotheses, using hard and reliable data such as numbers that has been collected in a structured fashion. The strengths of quantitative research therefore lie in its replicability, generalisation and comparability. However, it has been criticised for being static and distant from the research object. The use of a qualitative research strategy on the other hand is then appropriate when there is an emphasis on the meaning behind the research objects' actions, values and beliefs, and the need for understanding the contexts is greater, which often requires a close and relatively unstructured method of collecting data. The qualitative strategy therefore places greater emphasis on words, and its strength is its ability to provide rich data in a natural setting. Being a highly context-specific way of collecting and analysing data, qualitative research's main weakness is its low generalisability and replicability. Due to these characteristics, qualitative research strategies are more commonly used in inductive research as it enables the research to be more explorative, whereas quantitative research is more common when applying a deductive approach due to its ability to reject or accept predetermined hypotheses based on hard data. (Bryman & Bell, 2011)

For this study, a qualitative research strategy has been chosen, as only limited research has been done in the field of FinTech and financial inclusion, and as the purpose of the study therefore aims to increase the understanding for FinTech companies' views and behaviour in relation to the challenges of the highly specific context of financial inclusion in developing economies. A qualitative research strategy also allows for more freedom and flexibility to describe the role of FinTech in the landscape of financial inclusion, which further strengthens the choice of a qualitative research strategy (Bryman & Bell, 2011).

3.2 Research Design

Yin (1984) argues that the decision of what research design to apply depends on three variables; the substance and form of the research question(s), the need for control of behavioural events, and whether the focus is on a contemporary or historical event. He further argues that when the research question is asked as *how* or *why* about a contemporary event of which the researcher have limited or no control over, a case study design is the most appropriate design. Case studies are furthermore appropriate when there is lack of theory available in the area, when the topic in question is complex and broad, when the context is of importance, and generally when the nature of the purpose and research questions is of an explorative nature (Dul & Hak, 2008).

As the research question of this study is aiming to investigate *how* the contemporary phenomenon of FinTech companies can improve financial inclusion in developing economies by studying them in their natural environment, a case study research design was chosen for the study. More specifically, a multiple case study design was chosen. Dul & Hak (2008) state that the preferred type of case study design when conducting theory-building research is the comparative case study, namely the inclusion of a small number of different cases. The reason for being so is that by including several cases, the convenience and efficiency of generating theory is increased as the likelihood to discover the full range of factors and effects is increased, and the certainty of the findings can be strengthened by repeat findings throughout the set of cases. The multiple case study design also allows for comparison of the cases in their unique environment which enables the researchers to find similarities as well as contrasts, which in turn could increase the level theoretical reflection (Bryman & Bell, 2011). Thereby the comparison can affect the emerging theory in itself. Moreover, the multiple case study design also enhances theory building as it takes several cases into account and thereby contributes to the stability of the theory (Bryman & Bell, 2011).

3.3 Research Process

3.3.1 Data Collection

This study has chosen to use a semi-structured interview method to collect data, largely because of its flexibility and the possibility it provides to gain a deeper understanding of a topic, while also being able to maintain some level of structure and focus in the interviews. The method entails asking the same set of questions to all interviewees, using an interview guide. The use of an interview guide brings structure to the interviews and ensures that the discussions do not become too broad, and does instead make them more cohesive, while still allowing certain freedom for the interviewee to elaborate his/hers answers (Kallio, Pietilä, Johnson, & Kangasniemi, 2016). However, the questions in semi-structured interviewing are kept relatively open and do not necessarily need to be asked in the same order or manner as stated in the interview guide in order to make room for flexibility and freedom for the interviewees to elaborate on their answers, which is of great importance when the researcher's interest lies in the interviewees opinion. This method of collecting data corresponds well with the aim of this study due to its explorative approach, as more focus is then given to the topics that the interviewee finds important, which thereby enable the researchers to gain a deeper understanding of the interviewee's view of the topic in question.

Moreover, as opposed to structured interviewing, the use of semi-structured interviews allows for the possibility to ask follow-up questions, which enables further development and elaboration of the interviewee's answers. However, when applying a semi-structured interviewing method, the researchers need to be aware that the openness of the questions requires that the researchers maintain an unbiased mindset in order to avoid misinterpretation, but also that the comparability of the different interviewees' answers may be affected by the way the questions are formulated and by the weight the interviewee gives each question. (Bryman & Bell, 2011)

3.3.2 Case Selection

In order to select cases for the study, a mix of purposive and convenience sampling methods has been applied. To be able to answer the research questions, it was essential to select cases that could fulfil the requirements of being able to be classified as FinTech companies, being located in India, and also having some visible connection to financial inclusion. Such connections could be that the companies' products or services had obvious application areas in the financially excluded segment, that the company had been mentioned in news media or market research reports in the context of financial inclusion, or that the company itself had an outspoken ambition of improving financial inclusion. As face-to-face interviews was the prioritised mode of conducting the interviews through, it was also necessary for the researchers that the case companies included in the study to be located in the same region in India, as extensive travelling would not be possible under the time and resource limitations of the study. As the city of Bangalore has one of the highest concentration of FinTech startups in India (KPMG, 2016), emphasis was placed on finding companies with a headquarter or an office in Bangalore, although a few companies outside of Bangalore also were contacted in order to secure that the minimum number of cases for the multiple case study would be reached. To get in contact with such companies, the first step was then to search for companies that could meet the previously mentioned requirements. To do so, the researchers went through a number of FinTech-devoted internet sites and blogs, industry and market research reports, and online newspaper articles. This lead to an extensive list of FinTech companies located in Bangalore and/or another location in India. The companies on the list where then screened to assess whether they were coherent with the researchers' definition of FinTech companies, and also whether they had any visible connection to financial inclusion. Thereafter, all the companies that had passed the screening were contacted directly via email in order to establish contact and to check whether the company in question would be willing to participate in the study. The mail sent contained a small presentation of who the researchers were, a brief description of the nature and objective of the study and why it was being conducted, why an interview with the company in question would contribute to the research, and lastly also the question of whether the company in question would be willing to meet with the researchers for an interview.

Although the aim of the researchers was to directly establish contact with a person at a high level, such as the CEO or founder at each company, many of the companies were contacted through a general email address as this was the only contact information given on their websites. This did to a large extent put the responsibility on the company who should respond to the email but also who the best suited person to interview would be, based on the information given about the study in the initial email. In the cases where specific mail addresses were available, the founder or CEO of the company was contacted directly. Eventually, 10 case companies were selected and subsequently interviewed, and these are presented in Table 3.1 below.

Company	**Description**	**Interviewee(s) position(s)**	**Interview Setting & Duration**
FinTech A	Payment solutions provider that enable businesses to accept card payments through a mobile-enabled POS device.	- VP Enterprise Business	Face-to-face 40 min
FinTech B	Payment solutions provider that enable businesses to accept various modes of payment through their own devices or through a mobile-enabled POS device.	- Senior Manager Marketing - Marketing Specialist	Face-to-face 65 min
FinTech C	Provider of KYC identity authentication and fraud detection solutions using biometric data and machine learning.	- CEO & Founder	Face-to-face 70 min
FinTech D	Payment solutions provider that enable businesses to accept various modes of payment online.	- COO & Co-founder	Face-to-face 65 min

FinTech E	One of India’s largest crowdfunding platforms. Mainly focused on the underserved segments.	- Head of Business Operations Lending	Face-to-face 55 min
FinTech F	Provider of money management solutions and loans based on SMS-data.	- Product & Marketing Head - Marketer	Face-to-face 45 min
FinTech G	Payment solutions provider with their own mobile wallet. Business correspondent for one of the largest banks in India.	- Vice Chairman & Joint Managing Director	Skype 50 min
FinTech H	E-commerce platform that offer loans partly based on transactional data to small businesses.	- CEO & Co-founder - COO & Co-founder - Director Engineering - VP Engineering	Face-to-face 70 min
FinTech I	Provider of loans based on various alternative data.	- CEO & Founder	Face-to-face 60 min
FinTech J	Payment solutions provider that enable payments through sound wave technology.	- Assistant General Manager - Expansion & Marketing Lead	Face-to-face 60 min

Table 3.1. *Case companies*

3.3.3 Interview Process

When selecting what mode to conduct the interviews in, face-to-face interviewing was the primary choice, as evidence have pointed towards that the quality of data is superior when interviews are conducted face-to-face rather than when being conducted via telephone or similar media as a consequence of the interviewee then feeling more engaged in the discussion (Bryman & Bell, 2011). Face-to-face interviews were also preferred because of the difficulties in conducting longer interviews over the phone (Bryman & Bell, 2011). However, not all interviews were conducted face-to-face due to distance constraints. All in all, nine of the interviews were conducted face-to-face and one interview was conducted via Skype.

As mentioned earlier, semi-structured interviewing entails the use of an interview guide. Therefore, an interview guide was developed before the interviewing process began (see Appendix A). This was done by identifying a few areas of interest that had grown out of the literature review. Thereafter, a number of questions within these areas were discussed, sifted through and refined, which eventually resulted in a preliminary interview guide. This preliminary interview guide was then discussed with the thesis supervisor and further revised. Lastly, in order to test the interview guide in a real interview setting and thereby reveal whether the questions could be better formulated, if any questions should be dropped or added, and to get an estimate of the length of time each question would require, a pilot interview was conducted. Testing the interview questions is important to ensure the quality of the research, as the questions will later come to affect both the collection of data as well as the analysis of it (Kallio et al., 2016). After the pilot interview had been conducted, a few minor issues were adjusted. The final interview guide consisted of 17 questions which were structured into different topics in order to enhance the flow of the conversation, and so that the researchers could overview what topics had been discussed and thereby also easily switch the order of the topics if necessary. Upon the request of several of the interviewees, the interview guide was sent to the companies about a week before each interview together with a short description of the study to give the interviewee the possibility to prepare.

The interviews lasted between 40 and 70 minutes and were held at the interviewees offices in private quiet rooms without any environmental disturbances, which allowed all focus to be directed towards the discussions. Both researchers were present at each interview, although one of them took the lead in asking the questions so that the other one could concentrate on observing non-verbal cues provided by the interviewee. By having one researcher active and asking the questions from the interview guide, the passive researcher could maintain a better overview of what questions had been asked and what needed to be clarified (Bryman & Bell, 2011). As the interviews proceeded, some questions were skipped as they became answered by the interviewee before being asked. In order to be able to go through the interviewees' answer thoroughly at a later point in time, which is of particular importance in qualitative research due to the importance that is placed in words and meanings, permission to audio record the interview was asked and also allowed in each interview. By recording and transcribing the interviews, a more detailed analysis can be made as even subtle meanings could be detected. A drawback of recording and transcribing the interviews is however how time consuming the process can be. Recording the interviews also gives more room to focus on the interview itself instead of focusing on taking extensive notes. Thereby, both researchers could participate in the discussion and ensure that all questions had been answered. (Bryman & Bell, 2011)

3.3.4 Literature Review

In order to review existing literature, a narrative approach was applied for the purpose of this study. Narrative literature reviews are often favourable compared to systematic literature reviews when qualitative studies of an inductive nature are being undertaken, as theory then is intended to be the outcome of the study, not the basis for it (Bryman & Bell, 2011). However, Bryman and Bell (2011) state that the line between narrative and systematic literature reviews is not always entirely clear, and the literature review in this study therefore also shows some influences of a systematic approach. To search for literature, the researchers mainly used the electronic databases Google Scholar, EBSCO Business Source Premier, Scopus and the Gothenburg University Library's own electronic database Supersök. After having made a pre-study of the topic, a set of keywords and inclusion criteria were established which were then used to search the databases for literature. A first screening of the articles in these databases was made based upon their title and abstract. Particular attention was also directed towards articles with high citation counts. A second screening was conducted by skimming through the articles that had been deemed relevant in the first step. Those articles that were deemed most relevant for the research was then read in depth. From this point, selection of a few additional articles was made through so called *snowballing*, as relevant literature was found in the articles the researchers read in depth.

3.3.5 Data Analysis

The most common strategy for analysing data in theory-generating qualitative research is the grounded theory approach (Bryman & Bell, 2011). The use of a grounded theory approach, which is a highly iterative and continuous process of shifting back and forth between data collection and analysis, is however highly resource-demanding in terms of time (Bryman & Bell, 2011). As the researchers believed that the theoretical requirements of grounded theory would not be possible to fulfil during the short time span of a master thesis project, it was decided to apply a simpler mode of thematic analysis to analyse the data. The term *thematic analysis* has, although being commonly used, been argued to be an ambiguous term with no clear distinction of its techniques (Braun & Clarke, 2006; Bryman & Bell, 2011). However, Braun and Clarke (2006) attempted to bring clarity to the term by outlining its meaning, procedures, advantages and pitfalls. They argue that similarly to grounded theory, thematic analysis searches for themes in the data, however without applying such a rigorous and iterative process as associated with grounded theory. Due to being less theoretically bounded, Braun and Clarke also argue that many studies claiming to use grounded theory are in fact applying a thematic analysis approach as they are not able to fulfil the full requirements of grounded theory.

After the researcher have become familiarised with the data, the process of thematic analysis then begins with the process of coding the data, i.e. identifying small segments of the data that seems to be of interest to the researcher. Thereafter, the researcher searcher for themes in the codes and these are collated into initial themes that then are reviewed and refined, and connections between different themes are identified. Lastly, the themes are defined and further refined, and also given names (Braun & Clarke, 2006). To code the data and to ease the process of generating themes, the researchers have used the computer software NVivo 11.

3.4 Research Quality

This section will discuss the study's research quality by looking at its internal and external validity, and its internal and external reliability.

3.4.1 Validity

3.4.1.1 Internal validity

Internal validity is concerned with the issue of whether the researchers' observations are coherent with the theory that is generated (Bryman & Bell, 2011). Due to its ability to closely interact with the research object and thereby provide rich and detailed data, the case study design applied in this study strengthens the study's internal validity. To further increase the internal validity of the study, emphasis has also been placed on developing apt interview questions that fit the research objective, and that at the same time are formulated in a way so that the interviewees are able to understand them fully. The researchers did also discuss the key concept of financial inclusion with the interviewees in order to reveal any differences in the interpretations of the concept. LeCompte and Goetz (1982) further argue that researcher biases might affect the interpretation of the collected data and that this would pose a threat to the internal validity of the study. To address such a potential issue, the researchers have continuously strived to unveil any of their own biases that could have caused contamination in the collected data and subsequently also causing an inferior analysis. Another issue of internal validity in qualitative research is related to the selection of cases. The selective sampling techniques that are often applied in qualitative research could lead to distorted data that generates theory that is only applicable to certain participants or circumstances. By ensuring diversity in the types of FinTech companies included in this study, the gravity of such an issue has been reduced and internal validity increased. Lastly, LeCompte and Goetz (1982) argue the internal validity to be one of the strengths of qualitative research due to the fact that the researcher often spends a longer time with the participants during the data collection process in comparison to quantitative, leading to a better understanding of the participants reality and also accounting for history effects, i.e. the issue that social phenomena under study change over time. However, for these benefits to be fully realised, the study has to be undertaken during a long period of time. Due to the time constraints of this master thesis, history effects of FinTech companies in the context of financial inclusion might not have been fully accounted for.

3.4.1.2 External validity

The external validity of research is concerned with how generalisable the results are beyond the specific context of the study (Bryman & Bell, 2011). One common issue in qualitative research in terms of external validity is that the selection of research objects is seldom undertaken in a fashion that generates a representative random sample of the population (LeCompte & Goetz, 1982). Instead, the research samples of qualitative research are often small and chosen because of their specific characteristics and contexts, and the researcher is often also inhibited from producing a random sample due to issues of access (LeCompte & Goetz, 1982). These issues of sampling are typical of case study research. However, by applying a multiple case study design the sample size is increased, hence improving the external validity of the research. The cases were furthermore selected as to represent various differing actors within the FinTech sector and did thereby enable comparison of commonalities and differences among several cases, which in turn increases the generalisability of the findings across the FinTech sector. Another issue of external validity in qualitative research that needs to be considered is that, when studying a research object closely, the researcher inevitably affects the research object in one way or another. By undertaking semi-structured interviews which allows the interviewee to respond with much freedom, and by undertaking the interviews face-to-face in the interviewees' natural setting thus also contributed to the external validity of the study. Overall then, with respect to being a qualitative study, the external validity of the study could be considered fairly high.

3.4.2 Reliability

3.4.2.1 Internal reliability

Internal reliability refers to whether several researchers within one single study agree with each other and would come to the same conclusions based on their own observations. As compared to internal reliability in quantitative research, internal reliability in qualitative research is then more concerned with the conformity of multiple researchers' descriptions and compositions of events rather than their frequency. Because of the relatively unstructured process of collecting data in qualitative research, high internal reliability could be difficult to attain and does therefore constitute an issue that needs particular attention when a study is undertaken by multiple researchers. LeCompte & Goetz (1982) argue that having multiple researchers present during the data collection process is one of the best solutions to avoid low levels of internal reliability as the researchers then can discuss their observations of the same event. In this study, the two researchers were both present during all interviews, which gave both researchers a chance of forming their own interpretations, which then were discussed in order to reach a joint and coherent interpretation of the interviewee's answers. By recording and transcribing the interviews, the researchers were also able to go through the interviewees' answers multiple times at a later point in time and discuss the answers and eventual uncertainties with each other, which improved the researchers' ability to reach a coherent conclusion. Thus, any ambiguity in terms of interpretation was discussed and clarified, and each conclusion made was agreed upon by both researchers before proceeding with the analysis.

3.4.2.2 External reliability

The external reliability of a study refers to the replicability of it, namely to the degree of which other independent researchers would be able to generate the same findings in the same or in a similar setting. By its nature, qualitative research has great inherent difficulties in obtaining external reliability as it deals with unique social settings that are not static. To cope with this issue, several measures have been undertaken by the researchers to enhance the external reliability of the study. Firstly, it has been carefully documented how the researchers have proceeded and what settings the study has been conducted in. As a part of this process, the data collection process has been outlined in detail, the interviewees' roles and the type of companies they work in have been specified to account for any informant bias, and the context in which the study was undertaken have been described. Also, conducting the interviews in a semi-structured fashion and presenting the interview guide used in the study, further improves the possibility to replicate the interview process. In terms of the analysis of the data, by constructing a simple and comprehensible theoretical framework that also clearly defines the unit of analysis, and by presenting the themes that have been generated, the external reliability of the study is further enhanced. Lastly, the extent to which the researchers are a member of the group they are studying and what social position the hold may affect what information the researchers might get from the interviewees. In this study, the researchers were not to be considered as members of the local startup-community in India, and as students their social position might be considered as moderate, which could have limited the amount of information the interviewees were willing to share which thus also affected the replicability of the study negatively. (LeCompte & Goetz, 1982)

3.6 Ethical Concerns

When conducting business research, a number of ethical concerns must be considered by the researchers. Bryman and Bell (2011) highlight four general areas of particular importance that have been identified in existing literature on ethics in business research, namely if the researchers are causing any harm to the research participants, if there is a lack of informed consent, if the researchers invade the privacy of the research participants, and if there is any deception involved from the researchers' side. In this study, several measures have been taken to ensure that the study maintains high ethical standards. Firstly, all the participants have been offered anonymity and the interview data has been handled with caution to ensure the confidentiality of the participants full answers. Secondly, the researchers have since initial contact aimed to make the nature and purpose of the research clear for the participants by explaining why the study was undertaken, what it's objectives were, and why an interview with the participant in question would be useful for the research. The researchers have further tried to give as detailed and explaining answers as possible to any questions the participants might have had about the study or the researchers' backgrounds. The interviews have furthermore largely been held on the participants' own conditions, at times and in environments chosen by them, and consent to record the audio of the interviews was asked for and granted in the beginning of each interview.

4. Empirical Findings

The following chapter presents the empirical findings of the study. The presentation of the findings has been structured after the business model canvas, and the themes that emerged in the empirical data will be presented in relation to each of the nine business model building blocks. Structuring the empirical data in such a way allows for a manageable overview of how each part of the FinTech companies' business models relate to the financially excluded segment.

4.1 Customer Segments

When looking at what the main customer segments of the interviewed FinTech companies are, no particular focus on the financially excluded segment can be found. Their main customer segments vary from individuals in the lower levels of the economic pyramid and small stores consisting of a single individual, to big enterprises and governmental organisations. It is only FinTech E that claim to be focusing on individuals in the lowest part of the economic pyramid, and they partner with MFIs and NGOs to be able to reach this segment.

Three of the companies (FinTech I, FinTech H & FinTech F) focus mainly on customers who are at the low end at the economic pyramid, however not in the absolute lowest level. Of these, two focus on individuals (FinTech I & FinTech F), and one focus on businesses (FinTech H). FinTech F argued that the lower middle-segment does not have good enough credit scores or totally lack scores to be served by banks, which makes this a better opportunity for them. They further stated that the rationale for not serving the lowest income segments is that they are too resource demanding.

Five of the companies (FinTech A, FinTech B, FinTech D, FinTech G & FinTech J) serve businesses in a varying range of sizes, ranging from small mom and pop stores, to large enterprises. Among these five companies, the focus is thus not centred around the lowest part of the economic pyramid although they have a presence there. One of these companies (FinTech B) also stated having large governmental bodies as customers of their services.

The last company (FinTech C) focus mainly on banks or other traditional financial institutions, since their product offering (KYC identity authentication) is such as it needs to be offered in the context of another product or service offering that one of these institutions provide.

Company	Theme: *No particular focus on the financially excluded segment*	In Appendix B
FinTech A	- Businesses ranging from small shops to large enterprises	1.1
FinTech B	- Businesses ranging from small shops to large enterprises - Governmental bodies	1.2
FinTech C	- Financial institutions	1.3
FinTech D	- Businesses ranging from small shops to large enterprises	1.4
FinTech E	- Main focus on individuals in the lowest part of the economic pyramid	1.5
FinTech F	- Main focus on individuals in the low end of the economic pyramid, however not the lowest.	1.6
FinTech G	- Businesses ranging from small shops to large enterprises	1.7
FinTech H	- Main focus on businesses in the low end of the pyramid economic, however not the lowest.	1.8
FinTech I	- Main focus on individuals in the low end of the economic pyramid, however not the lowest.	1.9
FinTech J	- Businesses ranging from small shops to large enterprises	1.10

T*able 4.1. Theme: Customer Segments*

4.2 Value Proposition

An overall finding in terms of what value the interviewees' business models propose to the financially excluded segment is that their value propositions seem to be largely based on enabling the financially excluded segment's access to formal financial services by increasing their access to already existing financial services provided by other actors. Half of the companies (FinTech B, FinTech D, FinTech E, FinTech H, & FinTech J) even referred to themselves as being 'platforms' between other financial service providers and their own customers.

Three of the companies (FinTech B, FinTech D & FinTech J) enable their business customers to accept a vast number of existing payment modes without the businesses themselves having to possess and pay for each of the numerous payment solutions. Examples of such payment solutions that a business might need to accept are cash and check reconciliations, Aadhaar[2], credit cards, SMS-pay, QR-code payments, and over 25 different mobile wallets. Similarly,

[2] Aadhaar is an identity authentication system based on biometric and demographic data provided by the Indian government (Government of India, 2017)

FinTech A provide a point-of-sale (POS) device that enables their customers to accept card payments regardless of what bank they have an account in. FinTech A described that the logic behind such an unbound POS device is that of the 40-45 banks that exist in India, only 6-7 are able to provide POS devices to their customers, which could mean that a person possessing an account in a bank that cannot provide a POS device will need to open a bank account in another bank just to be able to accept card payments. FinTech D, who enables their customers to accept payments online, do not even require their customers to possess one single mode of payment and only require their customers to possess a mobile phone and an internet connection.

FinTech D, FinTech F, FinTech H and FinTech I who all provide loans to their customers do so by acting as an intermediary between lending companies and borrowers. By building risk profiles of their customers from a combination of alternative data that they have created themselves as well as sourced externally, and by then providing this data to their lender partners, these companies enable their customers to access loans which they otherwise would not have been able to access. Two of these companies (FinTech D & FinTech H) mentioned how this data sharing thereby make it much easier for the lending companies to lend to this type of businesses as they can take wiser calls about the credit risk. FinTech E also leverage alternative data as they, based on the data, write stories about the loan applicants to build a profile that can be used to attract funders.

For the companies offering loans, a majority of the companies (FinTech F, FinTech H & FinTech I) emphasised the trust factor they provide to their lending partners as an intermediary, and two of them (FinTech D & FinTech H) stated that they increase the economic viability for these lending partners as a result of aggregating a large number of small loans. FinTech C have taken an intermediary role between existing financial institutions and their customers by simplifying the KYC identity authentication process necessary for other financial services and products, such as opening a bank account, by using alternative data.

Unlike the other interviewed companies, FinTech G have their own mobile wallet and provide a wide range of financial services themselves and are being seemingly independent, as they described how, by partnering with the card association RuPay, their mobile wallet could substitute the need for an actual bank account. FinTech G do attribute this ability to provide various financial services to the fact that they became a business correspondent (BC)[3] to one of the largest banks in India, thus acting as a highly integrated intermediary. Moreover, FinTech G explained how they, before becoming a business correspondent, focused on acting as an intermediary as well by reducing the complexity retailers faced in dealing with different operators and legal entities.

[3] Business correspondent (BC), is an agent engaged by a bank to provide its services where they have no branches or ATMs. The bank takes full responsibility of the acts of the BC. (Reserve Bank of India, 2008)

FinTech E, who provide a crowdfunding platform, have a value proposition that is not as clearly based on solely being an intermediary between existing financial services providers and the financially excluded segment as they have their own crowdfunding website. However, one of FinTech E's main source of funds is one of the world's largest micro-lending platforms, thus enabling the financially excluded to access this platform.

Lastly, in order to act as an intermediary, many of the companies (FinTech B, FinTech D, FinTech E, FinTech I & FinTech J) also emphasised the need for integration into these other financial service providers' systems.

Company	Theme: *Acting as intermediary platforms*	In Appendix B
FinTech A	- Enable customers to accept card payments regardless of what bank they have an account in	2.1
FinTech B	- Enable customers to accept payment from various payment solution providers - Emphasise integration into other service providers' systems - Refer to self as 'platform'	2.2
FinTech C	- Provide the identity authentication process of individuals for financial institutions	2.3
FinTech D	- Enable customers to accept payment from various payment solution providers - Facilitate intermediation of loans provided by banks and NBFC[4]s - Provision of alternative data important to facilitate intermediation -Legitimise the provision of loans to the financially excluded segment by increasing trust or economic viability for lending partners to do so - Emphasise integration into other service providers' systems - Refer to self as 'platform'	2.4
FinTech E	- Enable individuals to access one of the world's largest micro-lending platforms - Provision of alternative data important to facilitate intermediation - Emphasise integration into other service providers' systems - Refer to self as 'platform'	2.5
FinTech F	- Facilitate intermediation of loans provided by banks and NBFCs - Provision of alternative data important to facilitate intermediation - Legitimise the provision of loans to the financially excluded segment by increasing trust or economic viability for lending partners to do so	2.6
FinTech G	- Business correspondent for one of India's largest banks	2.7
FinTech H	- Facilitate intermediation of loans provided by banks and NBFCs - Provision of alternative data important to facilitate intermediation - Legitimise the provision of loans to the financially excluded segment by increasing trust or economic viability for lending partners to do so - Refer to self as 'platform'	2.8
FinTech I	- Facilitate intermediation of loans provided by banks and NBFCs - Provision of alternative data important to facilitate intermediation	2.9

[4] Non-Banking financial company (NBFC) is a company similar to a bank. They can lend and make investments but differ from a bank in the sense that they cannot accept deposits. (Reserve bank of India, 2017)

	- Legitimise the provision of loans to the financially excluded segment by increasing trust or economic viability for lending partners - Emphasise integration into other service providers' systems	
FinTech J	- Enable customers to accept payment from various payment solution providers - Emphasise integration into other service providers' systems - Refer to self as 'platform'	2.10

Table 4.2. *Theme: Value Proposition*

4.3 Channels

In terms of the channels that are being used by the interviewed FinTech companies for communication and distribution, two themes have been identified.

The first theme is that the companies generally stressed the need for having communication through a physical presence in order to be able to penetrate the financially excluded segment. This is done by either establishing their own team of salespeople or representatives who go and meet the customers face-to-face (FinTech A & FinTech B), by partnering with local businesses or entrepreneurs (FinTech G, FinTech H & FinTech I), or by partnering with MFIs or NGOs having a local presence (FinTech E). The need for these salespeople and partners to be local and part of the society and social networks to be able to gain trust from the financially excluded individuals and businesses is further emphasised. Four of the companies do however not have a physical presence in the financially excluded segment. Nevertheless, two of these (FinTech D & FinTech F) indicated that this is only due to resource limitations and that they would have had such a presence if they were larger companies, and FinTech F even stated that the required physical presence needed is the only reason they are not able to serve the lowest income segment of the market. As FinTech J mostly operate as a software development kit (SDK) that fully integrates into other service providers' services and products, the penetration of new markets is an issue that their partners mainly deal with. Lastly, FinTech C do not actively try to penetrate new markets since they are legally not allowed to market their product and can only accept customers coming to them uncompelled.

Company	**Theme: *Communication through a physical presence for penetration***	**In Appendix B**
FinTech A	- Emphasise need to be part of local society to gain trust - Establishes physical presence through their own sales teams	3.1
FinTech B	- Establishes physical presence through their own sales teams	3.2
FinTech C	- Do not actively strive to penetrate new segments themselves	3.3
FinTech D	- No physical presence due to resource constraints	3.4

FinTech E	- Establishes physical presence through partnerships - Emphasise need to be part of local society to gain trust	3.5
FinTech F	- No physical presence due to resource constraints	3.6
FinTech G	- Establishes physical presence through partnerships - Emphasise need to be part of local society to gain trust	3.7
FinTech H	- Establishes physical presence through partnerships - Emphasise need to be part of local society to gain trust	3.8
FinTech I	- Establishes physical presence through partnerships	3.9
FinTech J	- Do not actively strive to penetrate new segments themselves	3.10

Table 4.3. *Theme 1: Channels*

The second theme identified is that ongoing communication as well as distribution after penetration has taken place is largely based on mobile phone-accessible channels. All the interviewed companies except from FinTech C, FinTech E and FinTech J have both communication and distribution of their service through mobile phone channels, and of those three companies who need additional devices to offer their services (FinTech A, FinTech B & FinTech J), the devices have been mobile-enabled, i.e. they can connect to a mobile phone to utilise its internet connection. FinTech C are legally not allowed to market themselves, thus highly limiting their ability to communicate with the financially excluded segment. Nevertheless, they use a mobile phone app to distribute their solution. FinTech E, who are the only company that do not rely on any mobile technology, have MFI and NGO partners who handle all distribution and communication of their service to the financially excluded segment. Lastly, functioning mostly as a SDK, FinTech J distribute their service via mobile phone channels but leave the communication with the customers up to the partners they integrate with.

Company	**Theme: *Distribution and ongoing communication through mobile phone channels***	**In Appendix B**
FinTech A	- Communication and distribution through mobile phone channels - Additional devices needed for distribution are mobile-enabled	3.1
FinTech B	- Communication and distribution through mobile phone channels - Additional devices needed for distribution are mobile-enabled	3.2
FinTech C	- Distribution based on mobile phone channels	3.3
FinTech D	- Communication and distribution through mobile phone channels	3.4
FinTech E	- Communication and distribution through MFI/NGO partners	3.5
FinTech F	- Communication and distribution through mobile phone channels	3.6

FinTech G	- Communication and distribution through mobile phone channels	3.7
FinTech H	- Communication and distribution through mobile phone channels	3.8
FinTech I	- Communication and distribution through mobile phone channels	3.9
FinTech J	- Distribution based on mobile phone channels	3.10

Table 4.4. *Theme 2: Channels*

4.4 Customer Relationships

As for how the case companies manage the ongoing relationships with the end consumers of their services and products, i.e. the financially excluded, they are largely managed as self-service relationships, or non-existent due to having a partner that handles the entire relationship. Among the companies that mostly manage their end customer relationships themselves (FinTech A, FinTech B, FinTech D, FinTech G, FinTech H & FinTech I), digital media such as social media, informative apps and phone support were largely common to manage customer relationships. Several of the companies also stated providing education to the consumers of their services and products, although this education is largely focused on enabling the use of the service provided or to promote the use of digital payments in general. An exception to this was however FinTech I, who have built an automated function that helps their customers understand and improve their credit score.

Company	**Theme:** ***Mainly self-service customer relationships***	**In Appendix B**
FinTech A	- Mainly self-service relationships through social media, apps or phone support - Education/assistance provided about how to use service	4.1
FinTech B	- Mainly self-service relationships through social media, apps or phone support	4.2
FinTech C	- Limited customer relationship with end customers as they only perform one process (KYC) between financial institutions and the financially excluded. Financial institution partner handles the relationship.	N/A
FinTech D	- Mainly self-service relationships through social media, apps or phone support - Education provided about benefits of digital payments in general	4.3
FinTech E	- No direct relationship with the financially excluded as MFI/NGO partners handle entire relationship	N/A
FinTech F	- Mainly self-service relationships through social media, apps or phone support - Education/assistance provided about how to use service	4.4
FinTech G	- Mainly self-service relationships through social media, apps or phone support - Education provided by retail partners about benefits of digital payments in general	4.5

FinTech H	- Mainly self-service relationships through social media, apps or phone support - Education/assistance provided about how to use service	4.6
FinTech I	- Mainly self-service relationships through social media, apps or phone support - Education provided around good credit behaviour	4.7
FinTech J	- Partners mainly manage relationships as FinTech J integrates into their services as an SDK - Education provided about benefits of digital payments in general	4.8

Table 4.5. *Theme: Customer Relationships*

4.5 Revenue Streams

Regarding how the case companies generate revenue streams from the financially excluded segment, no overall mode was identified. However, the lending companies (FinTech D, FinTech E, FinTech F, FinTech H & FinTech I) did not surprisingly all base their pricing on the risk that was associated with the borrowers. As for the other companies, revenues were either based on monthly fees (FinTech A & FinTech B) or on a percentage of the transactions made through their payment solution (FinTech D & FinTech G). Lastly, revenue streams were not brought to discussion with the remaining company (FinTech C).

Company	**Theme: *Monthly fee / Share of transactions made / Risk-based***	**In Appendix B**
FinTech A	- Monthly fee	5.1
FinTech B	- Monthly fee	5.2
FinTech C	- Did not discuss their revenue stream	N/A
FinTech D	- Share of transactions made & risk-based	5.3
FinTech E	- Risk-based	5.4
FinTech F	- Risk-based	5.5
FinTech G	- Share of transactions made	5.6
FinTech H	- Risk-based	5.7
FinTech I	- Risk-based	5.8
FinTech J	- Share of transactions made	5.9

Table 4.6. *Theme: Revenue Streams*

4.6 Key Resources

A general theme in terms of what resources can be considered playing a key role for the case companies to be able to provide financial services and products to the financially excluded segment is technology. In particular, their technologies seem to enable them to provide more affordable services and products by removing inefficiencies or lowering risk. Five of the companies (FinTech A, FinTech D, FinTech E, FinTech F & FinTech J) stated technology as an enabling factor for them to keep their costs low, and although not explicitly ascribing lowered costs to their technology, four of the companies (FinTech B, FinTech C, FinTech H & FinTech I) stated that their technology enable them to provide more affordable services to their customers. FinTech G were the only company that did not explicitly talk about their technology and it is therefore not possible to know how it affects their costs.

Company	**Theme:** ***Technology key for reducing costs***	**In Appendix B**
FinTech A	- Technology reduces costs	6.1
FinTech B	- Technology enables affordable services	6.2
FinTech C	- Technology enables affordable services	6.3
FinTech D	- Technology reduces costs	6.4
FinTech E	- Technology reduces costs	6.5
FinTech F	- Technology reduces costs	6.6
FinTech G	- Not talking about their technology	N/A
FinTech H	- Technology enables affordable services	6.7
FinTech I	- Technology enables affordable services	6.8
FinTech J	- Technology reduces costs	6.9

Table 4.7. *Theme: Key Resources*

4.7 Key Activities

In terms of what activities could be considered as playing a key role for serving the financially excluded segment, the main theme identified was that all the companies, except from FinTech E, seem to focus heavily on simplifying and increasing the usability of financial services and products. There is thus a focus among the companies to reduce complexity and make their services and products easy to use. Four of the companies (FinTech A, FinTech C, FinTech D

& FinTech F) stated that their solutions are easier to use than alternatives on the market, and four of the companies (FinTech C, FinTech D, FinTech F & FinTech J) even argued that by making their services and products really simple, they are able to increase the acceptance for formal financial services and reduce the demand for informal alternatives.

Company	**Theme:** ***Simplifying and increasing usability of financial services and products***	**In Appendix B**
FinTech A	- Focus on simplifying and increasing usability of services and products - Solution easier to use than alternatives	7.1
FinTech B	- Focus on simplifying and increasing usability of services and products	7.2
FinTech C	- Focus on simplifying and increasing usability of services and products - Solution easier to use than alternatives - Simplicity increases acceptability of formal financial services	7.3
FinTech D	- Focus on simplifying and increasing usability of services and products - Solution easier to use than alternatives - Simplicity increases acceptability of formal financial services	7.4
FinTech E	- Not talking about simplicity/usability	N/A
FinTech F	- Focus on simplifying and increasing usability of services and products - Solution easier to use than alternatives - Simplicity increases acceptability of formal financial services	7.5
FinTech G	- Focus on simplifying and increasing usability of services and products	7.6
FinTech H	- Focus on simplifying and increasing usability of services and products	7.7
FinTech I	- Focus on simplifying and increasing usability of services and products	7.8
FinTech J	- Focus on simplifying and increasing usability of services and products - Simplicity increases acceptability of formal financial services	7.9

Table 4.8. *Theme: Key Activities*

4.8 Key Partnerships

Regarding what the key partnerships are for the interviewed FinTech companies to be able to improve financial inclusion, banks and NBFCs takes centre stage. Firstly, two of the lending companies (FinTech D & FinTech F) stated that they have to partner with banks or NBFCs as they are legally not allowed to lend money themselves. Although likely that the other two lending companies (FinTech H & FinTech I) are under the same regulations, these two companies stated that they partner with banks and NBFCs to access funds, as these entities have an advantage in raising capital. FinTech A further argued that they have to partner with banks in order to be able to deal with the card associations whom their service is dependent on. Being a business correspondent to one of India's largest banks, FinTech G's most important partner is, due to the nature of their organisational form, a bank. Similarly, due to the nature of the services that FinTech C (KYC identity authentication) and FinTech J (SDK that integrates into banks' apps), these two companies need to partner with banks as well. Furthermore, although not explicitly stating that any of their MFI partners they have for communication and distribution of their service are NBFCs, it is possible that several are as many MFIs are in fact NBFCs. Nevertheless, FinTech E also stated that many of their MFI partners wants to become small finance banks as they grow, which is a major concern for FinTech E as they are legally not allowed to provide funds to banks. Lastly, FinTech B did not mention any partnerships with banks or NBFCs at all.

Company	Theme: *Banks and NBFCs for enabling provision of services and products*	In Appendix B
FinTech A	- Need to partner with banks to be able to deal with card associations	8.1
FinTech B	- Do not talk about any partnerships with banks or NBFCs	N/A
FinTech C	- Banks partners due to nature of provided service	8.2
FinTech D	- Partner with banks and NBFCs due to regulations	8.3
FinTech E	- Partner with MFIs for distribution and communication with the financially excluded segment	8.4
FinTech F	- Partner with banks and NBFCs due to regulations	8.5
FinTech G	- Bank key partner due to organisational form	8.6
FinTech H	- Partner with banks and NBFCs due to their advantage in raising capital	8.7
FinTech I	- Partner with banks and NBFCs due to their advantage in raising capital	8.8
FinTech J	- Banks partners due to nature of provided service	8.9

Table 4.9. *Theme: Key Partnerships*

4.9 Cost Structure

In terms of the cost structure needed for the case companies to be able to serve the financially excluded segment, two major themes were identified. The first theme was that all companies seemed to be highly cost-driven. Eight of the companies (FinTech A, FinTech B, FinTech C, FinTech D, FinTech F, FinTech G, FinTech I & FinTech J) stressed the importance of cost efficiency, and three companies (FinTech C, FinTech E & FinTech H) stated that low costs enable them to attract customers or partners. Three companies (FinTech A, FinTech I & FinTech J) stated that they are cheaper than alternatives, and two companies (FinTech E & FinTech G) explicitly stated that they strive towards lowering the cost for the end consumer.

Company	Theme: *Cost-driven*	In Appendix B
FinTech A	- Emphasise cost efficiency - Cheaper than alternatives	9.1
FinTech B	- Emphasise cost efficiency	9.2
FinTech C	- Emphasise cost efficiency - Low costs attract customers or partners	9.3
FinTech D	- Emphasise cost efficiency	9.4
FinTech E	- Low costs attract customers or partners - Strive to lower cost for end consumer	9.5
FinTech F	- Emphasise cost efficiency	9.6
FinTech G	- Emphasise cost efficiency - Strive to lower cost for end consumer	9.7
FinTech H	- Low costs attract customers or partners	9.8
FinTech I	- Emphasise cost efficiency - Cheaper than alternatives	9.9
FinTech J	- Emphasise cost efficiency - Cheaper than alternatives	9.10

Table 4.10. *Theme 1: Cost Structure*

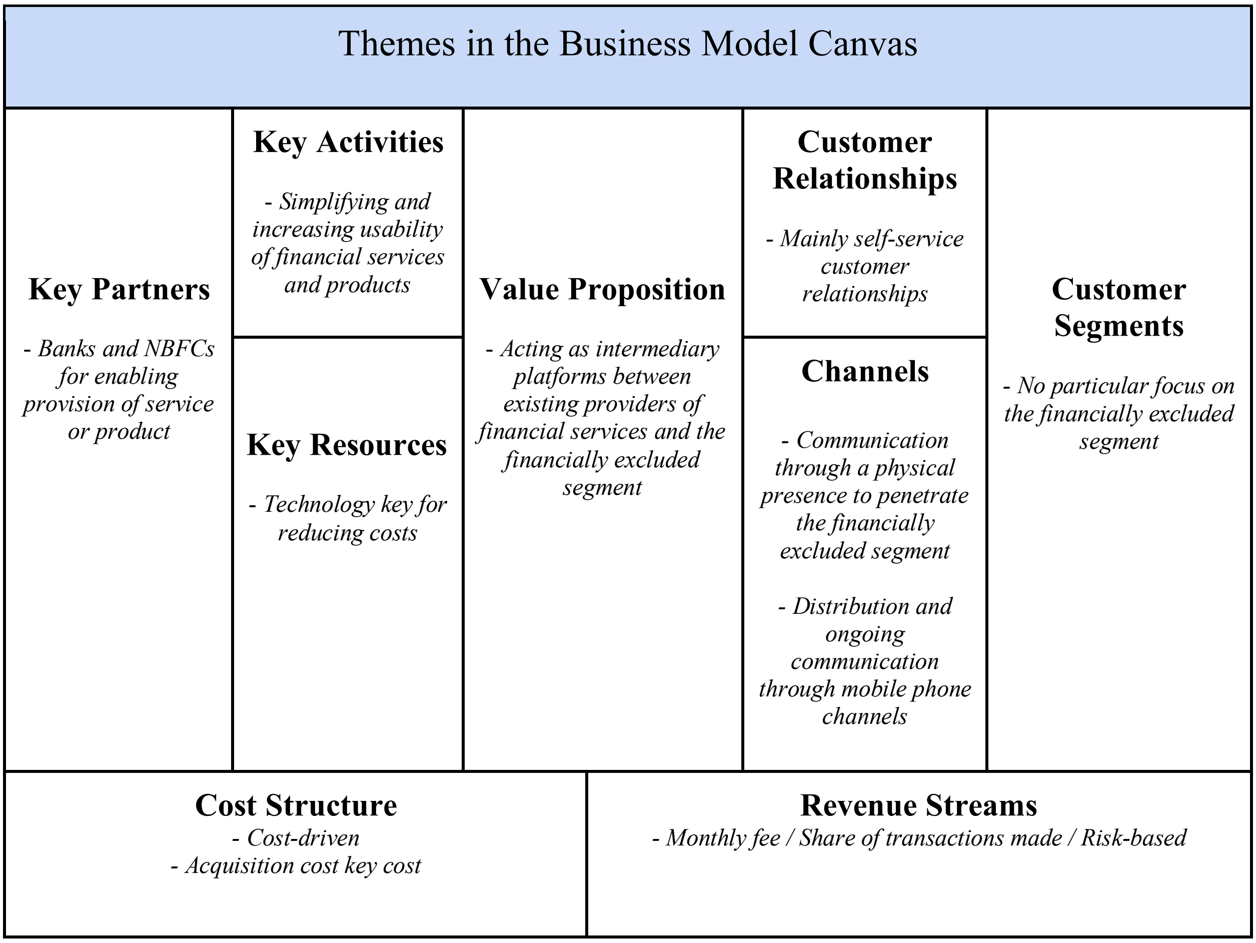
The second theme in terms of cost structure is a particular focus on customer acquisition costs. Three of the companies explicitly talked about acquisition costs as a focus, either in the terms of being a key challenge (FinTech A & FinTech I) or as being actively avoided (FinTech G). Although not explicitly mentioning acquisition costs, six of the companies (FinTech B, FinTech D, FinTech E, FinTech F, FinTech & FinTech J) implied that acquisition costs in the financially excluded segment are high. Three of the companies (FinTech B, FinTech D & FinTech F) stated that they have either limited their presence, or not established a presence in the lower half of the financially excluded segment at all, due to the physical presence required to do so. Two of the companies (FinTech E & FinTech H) similarly implied that their limited resources are a challenge for them to serve the financially excluded segment themselves. FinTech J stated that sometimes no amount of marketing can convince a merchant to use their service unless they get to try it themselves, thus also implying that acquisition costs can be very high. Lastly, as FinTech C are legally not allowed to actively market their service, acquisition costs were not mentioned as a concern for them.

Company	**Theme:** ***Acquisition costs***	**In Appendix B**
FinTech A	- Acquisition costs stated as challenge	9.1
FinTech B	- Imply that acquisition costs is a problem	9.2
FinTech C	- Acquisition costs not really a concern due to not being allowed to market themselves	9.3
FinTech D	- Imply that acquisition costs is a problem	9.4
FinTech E	- Imply that acquisition costs is a problem	9.5
FinTech F	- Imply that acquisition costs is a problem	9.6
FinTech G	- Acquisition costs actively avoided	9.7
FinTech H	- Imply that acquisition costs is a problem	9.8
FinTech I	- Acquisition costs stated as challenge	9.9
FinTech J	- Imply that acquisition costs is a problem	9.10

Table 4.11. *Theme 2: Cost Structure*

4.10 Summary of Findings

In order to summarise the empirical findings, the identified themes have been visualised in the business model canvas in Figure 4.1 below.



Themes in the Business Model Canvas

Key Partners

- Banks and NBFCs for enabling provision of service or product

Key Activities

- Simplifying and increasing usability of financial services and products

Key Resources

- Technology key for reducing costs

Value Proposition

- Acting as intermediary platforms between existing providers of financial services and the financially excluded segment

Customer Relationships

- Mainly self-service customer relationships

Channels

- Communication through a physical presence to penetrate the financially excluded segment

- Distribution and ongoing communication through mobile phone channels

Customer Segments

- No particular focus on the financially excluded segment

Cost Structure

- Cost-driven
- Acquisition cost key cost

Revenue Streams

- Monthly fee / Share of transactions made / Risk-based

Figure 4.1. *Themes visualised in the business model canvas. (Adapted from Business Model Generation: A handbook for visionaries, game changers, and challengers (p.18-19) by A. Osterwalder and Y. Pigneur, 2010, Hoboken, NJ: John Wiley & Sons)*

5. Data Analysis

The following chapter analyses the empirical findings in the light of the proposed research questions. Doing so, the theoretical framework of the 4As will be used as an analytical lens to structure the analysis. Section 5.1 relates to the first sub-question "How do Indian FinTech companies' business models account for the barriers to financial inclusion?", while section 5.2 relates to the second sub-question "What will the main challenges for Indian FinTech companies to improve financial inclusion be?".

5.1 How do Indian FinTech companies' business models account for the barriers to financial inclusion?

5.1.1 Awareness

As pointed out by Anderson and Billou (2007) and Chikweche and Fletcher (2012), companies aspiring to serve low income segments must often find alternative communication channels to create awareness of their services and products, as traditional marketing channels seldom have the needed reach in these segments. Although technology being the centrepiece of FinTech, it seems as FinTech companies actually deploy a combination of offline and online channels to communicate with the financially excluded segment and to thereby create awareness of their services and products.

Firstly, to be able to penetrate the local communities where the financially excluded are present, the case companies especially stress the importance of having a physical local presence among the financially excluded in order to be able to spread awareness in this segment. The emphasis among the FinTech companies on having a physical presence seems to be to enable access to the informal social networks where communication is built on trust and word-of-mouth communication. The FinTech companies indicate that technology is not on its own able to raise awareness in the financially excluded segment and that it is needed to be part of the society and understand the culture and habits of the financially excluded. These findings are in line with the arguments of Chikweche and Fletcher (2012) and Weidner et al. (2010) who argue that one of the most effective ways to create awareness in the BOP is to leverage informal social networks, and to thereby tap into the BOP segment's high levels of social capital (Viswanathan et al., 2012).

The FinTech companies leverage these informal social networks by either employing their own local salespeople and representatives, or by partnering with local companies such as small entrepreneurs and merchants, MFIs, or companies who have financially excluded individuals as employees. Such a physical presence does however not seem to be that easy to establish as the resource requirements for having a physical presence as well as the small size of their companies either limits or completely inhibits a few of the interviewed companies to enter the lowest segments of the market. These few companies do then have to rely solely on digital marketing instead of doing offline marketing, which they state that they would have done if they were larger. Thus, having a physical presence among the lower income parts of the financially excluded segment requires well designed strategies, especially in rural areas, where costs can escalate quickly, and less people can be reached in a day, as compared to when penetrating more urban areas. By hiring local people or establishing partnerships with local companies and organisations, many of the interviewed companies thereby circumvent the need for themselves to develop cultural knowledge and social networks, or even to establish their own branches in these locations and can thereby create initial awareness of their services and products more resource efficiently.

Moreover, acknowledging that the majority of India's population possesses mobile phones, the FinTech companies do however also undertake extensive marketing via digital media, e.g. social media such as WhatsApp and Facebook. This could as well be seen as an attempt to access the informal social networks emphasised by Chikweche and Fletcher (2012) and Weidner et al. (2010), as social networks today are increasingly becoming digital. However, several of the case companies indicate that this digital strategy of creating awareness is more appropriate and effective for the upper half of the financially excluded segment, and one company even explicitly state that they are not targeting the lowest segment of the financially excluded segment since they are based solely on digital marketing. Thus, with physical face-to-face and word-of-mouth communication generally being more effective to create initial awareness in the financially excluded segment, the mobile channel could, more constructively, be used as a communication channel to spread further awareness after initial awareness has been established. This approach is evident among the case companies who use physical communication channels to penetrate financially excluded markets, as many of them thereafter communicate through simple apps or social media channels, which thus then can be used to spread further awareness of additional products and services.

To sum up, it then seems as although having services and products highly centred around digital technologies, the case companies apply a combination of offline and online communication channels to raise awareness of their services and products among the financially excluded, where the offline physical channels are more effective at penetrating new localities and to establish an initial awareness, while the mobile phone channels are used for continued ongoing communication about services and products, but also to create initial awareness in the upper half of the financially excluded segment where the need for a physical presence is less acute.

5.1.2 Availability

One of the most unified business model characteristics among the FinTech companies included in the study was that their value propositions all centre around acting as some sort of interface or platform between the financially excluded segment and already existing types of financial services provided by other actors on the market. Doing so, the case companies are able to increase the availability of formal financial services to the financially excluded segment significantly, however in slightly different ways depending on the nature of their service.

Three of the case companies who are offering payment solutions do so by enabling their customers to accept a number of different payments modes through one platform, varying from cards, mobile wallets, QR-codes, net-banking, phone-banking, and Aadhaar, solutions which are all provided by other actors in the Indian payment sector. By doing so, they remove the need for the businesses to possess all these different kinds of payment modes themselves, which according to one case company could be as burdensome as keeping 25 different options in mobile wallets alone. Understandably, the cost and effort required to keep all these payment modes is likely not possible for MSMEs with their limited resources, so by providing these businesses with one single platform through which they can accept payments regardless of what payment mode their customer wants to pay with, these payment FinTech companies increase the availability of using digital payments solutions to their customers. Similarly, the fourth payment case company, FinTech A, enable their customers to accept payments by card regardless of what bank they have an account in. As FinTech A describe, the minority of banks that do provide POS devices to accept card payments often require that the business in question have an account in the same bank. Therefore, FinTech A increase the availability of card acceptance solutions by acting as an interface to their customers' bank accounts at the majority of banks that do not offer POS devices to their customers. The value of these payment platforms for these small businesses is then that they make it possible for them to accept digital payments instead of dealing with cash and its inherent drawbacks by reducing the complexities faced by the financially excluded in accepting digital payments. Reducing these complexities and increasing the simplicity of accepting digital payments is then key for FinTech companies in the payment space to be able to make digital payments more available to the financially excluded segment. Furthermore, by allowing these small businesses to start transacting digitally, the FinTech companies active in the payments space also enable the consumer to start creating transactional data about themselves. This in turn, can be used to create or improve, so far, non-existent risk profiles from the ground up, that later can be used to access previously inaccessible loans.

The remaining case company active in the payments space acts as an intermediary in a more obvious way. Having become a so-called business correspondent (BC), FinTech G is per definition an intermediary of a full range of financial services between banks and the financially excluded. FinTech G do however seem to have started out as the other payment FinTech companies interviewed in this study, namely by focusing on increasing the availability of services provided by other actors by reducing the complexity of having to deal with a variety of different providers. Interestingly though, being the oldest and largest company of the ones included in the study, it could be the case that FinTech G, as time has gone by, have outgrown the role of acting as an interface or platform for just a selected set of services and instead taken on a growing number of responsibilities upstream until eventually becoming a relatively independent financial services provider in the form of a BC.

The FinTech companies offering loans included in the study do so by acting as intermediating platforms as well. Four of them (FinTech H, FinTech D, FinTech F & FinTech I) have partnered with either banks or with NBFCs to extend loans directly to the financially excluded. Doing so, they are placing themselves right at the lower border of where these banks and NBFCs have previously been willing to go, and do thereby, in a sense, extend the reach of these lenders by acting as an extension platform. To facilitate such intermediation, it is emphasised that the FinTech companies are able to legitimise these loans for the lending partners by establishing a sense of trust between themselves and the lending partner, which is done by aggregating a number of borrowers and by providing the lending partners with alternative data about these applicants that the lending partners did not have access to earlier. By leveraging their digital technology resources to create alternative risk profiles with this data, which is partially created by the FinTech companies in the payments space, the FinTech companies in the lending space are able to lower the perceived risk, and in extension the costs, associated with extending loans to this segment. Thereby they can also reduce the need for the financially excluded segment to possess formal documentation to access formal financial services and products, which has proven to be a difficult requirement for the financially excluded to fulfil (Demirguc-Kunt et al., 2015; Shankar, 2013).

The crowdfunding platform FinTech E do also act as a platform to existing financial services, however in a more indirect way than the previously mentioned companies. By working closely with MFIs at one end and with one of the world’s largest microlending networks at the other, FinTech E enable individuals at the local level in India to gain access to a global microlending network, which in turn significantly increases the chances that these individuals will get the funds they need. Similar to the other lending FinTech companies, FinTech E legitimise their borrowers rights to funds by providing their collected data as well as stories built on this data to the global microlending network partner.

Thus, by acting as an interface of trust between the lenders and the financially excluded, the FinTech companies in the lending space are not only able to increase the economic viability for the lenders, but they are more importantly able to increase the availability of loans to financially excluded segment, as many of these potential borrowers would not have been able to receive a loan otherwise. An important prerequisite for being able to take on this role as an interface between lenders and borrowers is the process where they leverage their technology resources to create or gather alternative data about the financially excluded, which can be used to lower the risk, and hence also the costs for lenders to extend loans to the financially excluded segment.

Looking at FinTech C who are neither in the payment or the lending space, they might be the company with the clearest role as an interface between existing financial services provided by other actors and the financially excluded. Their entire business model is based on replacing one single process in existing financial institutions operations, namely the process of verifying of customers' identities (KYC). Again, being an interface of trust is central as FinTech C use alternative data to verify the identity of individuals who otherwise would have had trouble in providing the right documentation and thereby would have been viewed as too risky for the financial institutions providing the service in question. Thus, availability of services such as bank accounts and insurances become available to the financially excluded by enabling the FinTech C interface to access their data.

To extend the reach of existing services and thereby increase the availability of formal financial services to the financially excluded, many of the FinTech companies work closely with, and often integrate their own platform with their partners' systems by allowing their software to be integrated into apps, devices and websites, but also by supporting each other's processes with information exchanges, or by doing a full integration as in FinTech G's case. Thus, the FinTech companies are dependent on developing good relationships with these other financial institutions to be able to offer their services.

On the customer-facing end of this intermediation between the financially excluded segment and the existing providers of financial services and products, the case companies have largely focused on distribution through mobile phone channels. By doing so, they are able to circumvent many of the issues of poor physical infrastructure identified in the BOP literature (Anderson & Billou, 2007), such as the lack of banking infrastructure identified in both the BOP and the financial inclusion literature (Prahalad, 2012; Shankar, 2013). In line with the arguments of Viswanathan and Sridharan (2012), the case companies have thus leveraged existing infrastructure that traditionally might not be associated with the provision of financial services and products, namely the mobile phone infrastructure. However, only one of the case companies stated having the absolute lowest end of the economic pyramid as a customer segment, while the other companies stated serving individuals and businesses starting at what could be described as the middle of the lower end of the economic pyramid. As indicated by the case companies' emphasis on a physical presence in the lower income segments for creating initial awareness discussed in the previous section, the effectiveness of the mobile phone as a channel might be compromised the lower you venture down the income segments. It is possible that the level of digital literacy decreases the lower the income, as a result of lacking experience attributed to a limited access to digital technology. Indeed, the only company that reported being present in the absolute lowest segment, FinTech E, did so by leveraging MFI and NGO partners that almost exclusively utilise physical channels.

Lastly, several academics in the BOP literature (Anderson & Markides, 2007; Chikweche & Fletcher, 2012; Gollakota et al., 2010; Karnani, 2007) state that alternative financing methods might be required to increase the availability of services and products to the BOP segment. No particular focus on creating revenue streams based on financing adapted for the financially excluded segment was however evident among the case companies, and the focus seemed to be more directed towards being cheaper than alternatives, which will be further discussed in the section of affordability.

To sum up, the FinTech companies' value propositions are highly centred around increasing availability of formal financial services by acting as intermediary platforms or interfaces between the financially excluded segment and financial services provided by already existing financial institutions. The approach for how to do so, does overall seem to be determined by the amount of perceived risk that is present in a market segment. Where the perceived risk is high, and the number of existing alternatives therefore is low, e.g. in the space providing loans to the financially excluded, the FinTech companies focus on lowering the risk and increasing the trust from the providers of financial services who have not yet moved into that segment. This is done largely by leveraging technology to reduce the risks and costs associated with the scarcity of formal documentation among the financially excluded. Respectively, where the perceived risk is lower and where it therefore already exists a large number of players, as in the payments space, FinTech companies increase the availability of formal financial services and products to the financially excluded segment through the key activity of reducing the complexity the financially excluded face in dealing with the various existing service providers. Furthermore, to enable the intermediation, partnering and integrating with these other providers of financial services and products is necessary. By utilising mobile phone distribution channels, the case companies circumvent many of the challenges of lacking distribution infrastructure and are able to further increase the availability of services and products, however only to a limited extent in the lower half of the financially excluded segment.

5.1.3 Affordability

According to the BOP literature, to be able to provide affordable services and products to the BOP, there exists an essential need to focus on costs (Chikweche & Fletcher, 2012; Prahalad, 2012). Indeed, the results of this study found that the case companies are highly cost driven. As Nicoletti (2017) argues, the raison d'être for FinTech companies is inefficiencies in traditional financial institutions. Among the interviewed FinTech companies, one of the key resources for addressing such inefficiencies is their technology. These efficiency improvements attributable to technology do thus seem to be the case companies' main way of increasing the affordability of financial services to the financially excluded segment. The case companies emphasise their cost efficiencies and often state that their costs are lower than those of other financial institutions, as well as more affordable than informal lending alternatives, and that the use of digital technologies in particular is what enables these lower costs. One of these digital technologies that seems to be especially important for the FinTech companies is mobile technology. The interviewed companies' services have been designed so that they could be distributed through mobile channels, and in those cases where an additional device was needed to distribute the service, the device was able to connect to the internet via connecting to a mobile phone. Thus, the companies are able to circumvent costs of physical distribution that might be very high in areas with poor infrastructure. By doing so, the FinTech companies are able to keep the cost down of distribution by leveraging existing digital infrastructure in accordance with the arguments of Viswanathan and Sridharan (2012). By being mobile based, the integration into other financial service providers' systems, which is needed to act as an intermediary platform between the financially excluded and these service providers is also eased, as these systems often build upon the same mobile software technologies such as mobile applications.

In addition to being able to keep costs down by being highly mobile-centred, the affordability of the FinTech companies' services and products also connects back to the issues of lowered risk and the reduction of complexity that the FinTech companies enable by acting as platforms between the financially excluded and existing financial services. In payments, the need for the small businesses to keep different modes of payments is mainly a cost improvement for the business owner in terms of an efficiency gain, but it is not entirely clear how this efficiency gain relates to the fee charged by the FinTech company for offering the platform. Similarly, as the lending FinTech companies are not themselves offering the loans, as the loans are on the books of the lending partners, it is not entirely clear how the improvement in affordability of the loan derived from basing credit profiling on alternative data relates to the fee that the FinTech company charges for facilitating the loan. FinTech C's improvements in affordability are as well attributable to efficiency gains, as the financially illiterate individual do not longer need "*a middleman*" to help them with the KYC process. Moreover, that FinTech E states being a cheap source of funds for their MFI partners could likely be derived from the fact that their funding is based on donations and on loans offered without interest. Therefore, it is difficult to determine to what extent FinTech E's technology platform affects the affordability of their offering.

Prahalad (2012) argues that to be able to keep costs down when providing services and products to the BOP, it is essential that companies are able to share their costs with a collaborative ecosystem of partners. Among the case companies, partnerships were highly common, in areas ranging from the creation of awareness to accessing funds. However, few of the companies ascribed the reason for these partnerships as the possibility to lower costs. Instead, the rationale for these partnerships were instead stated as being compulsory, either due to regulation, to be able to deal with financial institutions, to the nature of the service provided, or due to a lack of cultural knowledge and access to informal social networks. However, two of the lending companies justified their partnerships due to their disadvantage in accessing low cost capital. Nevertheless, although not being explicitly mentioned by the case companies, it is likely that these partners helps the case companies keep their costs down as they do not have to acquire the expertise or legal status that would have been required for them to possess if they would not have established these partnerships.

To sum up, the case companies increase the affordability of formal financial services to the financially excluded segment by being highly cost driven, by leveraging their digital technologies, and in particular their mobile technologies, to reduce inefficiencies and lower risk. It is likely that the many partnerships identified among the case companies also help them keep costs down, but overall, it is unclear how much of the achieved cost reductions that are actually passed on to the financially excluded segment.

5.1.4 Acceptability

Even though a person might be aware of a product or service, and the product is available and affordable to him/her, the person still has to feel a need or desire to start using it and prefer it over his/hers existing alternatives. Thus, to increase acceptability of services and products in the low-income segment, it is important that the unique needs of the segment are identified, and that services and products are adjusted accordingly (Anderson & Billou, 2007; Gollakota et al., 2010). Overall, the case companies apply two strategies for increasing acceptability for their services and products among the financially excluded, namely by simplifying and increasing the usability of their services and products, and by leveraging local entities who already have a high degree of legitimacy and trust from the financially excluded segment.

When speaking of the reasons of why the financially excluded segment would use their service or product, almost all the case companies speak of how their service or product is easy to use and less complex than alternatives, both formal as well as informal. The company not mentioning increased usability or simplicity is FinTech E, which might be explained by the fact that their business model with MFI and NGO partners does not really affect how the relationships and processes between the MFIs or NGOs and the financially excluded segment look. The interviewed companies thus seem to rely heavily on the idea that offering easy to use and simple services and products, as compared to alternatives, is a compelling reason enough to increase acceptability of their services and products among the financially excluded segment and for them to start using these services and products. By simplifying services and products, it could be argued that the case companies are taking the unique characteristic of low financial literacy into consideration by reducing the need for extensive knowledge to be able to understand financial services and products. However, although such simplicity might increase the use of formal instead of informal services, the core product is still largely the same and not much adaption after the needs of the financially excluded seem to have taken place beyond that.

Secondly, the case companies leverage trust and relationships with the financially excluded segment that local entities possess in order to increase acceptability of their services and products. These local entities are accessed either by hiring them directly or by partnering with them. The case companies attribute a great deal of the effectiveness of a physical presence for reaching out in the financially excluded segment to the trust these local entities possess from the financially excluded segment, as well as the trust-based word-of-mouth communication networks that these entities enable access to. Thus, the case companies are able to leverage the social capital that is highly present in the low-income segment (Woolcock & Narayan, 2000).

Although not being explicitly mentioned by the case companies, these local entities could also potentially enable the FinTech companies to address issues such as financial illiteracy and a preference for informal financial services. One company does for example explain that many in the lower segments require hand-holding and a trusted entity to help them understand the provided services, and another one pointed out that sometimes no amount of marketing or communication can convince the financially excluded individual or business, to stop using cash and shift to a digital mode of payment unless they actually get to see the benefits for themselves. This way, they could also potentially increase financial literacy as someone can walk through the financial product and go through what it all means to use it. Thus, having a local entity in place, which the financially excluded individual or business trust, could be important to overcome the barrier of financial illiteracy, as they can guide them step by step in their adoption. When relying on that the simplicity and usability of their services and products will be what convinces the financially excluded to start using their services, such facilitation of testing the service or product becomes particularly important. Although possessing this potential to address the issue of financial illiteracy through providing general financial education through these local entities, none of the case companies do however seem to do so.

To sum up, the case companies mainly increase the acceptability of formal financial services and products among the financially excluded segment by increasing the simplicity and usability of the provided services and products, and by leveraging local entities that already possess trust from the financially excluded segment and have access to their informal social networks. Although having the infrastructure set in place to address the barrier of financial illiteracy as well, there is a lack of initiative to do so, which lead us to the next section, namely the main challenges FinTech companies face in improving financial inclusion.

5.2 Main Challenges

In the following section, the main challenges which the case companies face in improving financial inclusion will be discussed and analysed based on the empirical findings.

5.2.1 The Challenge of Acquisition Costs

As mentioned earlier, the digital technologies used and applied by the interviewed companies present a promising opportunity to make financial services in India more affordable to the financially excluded. However, to be able to realise the benefits of digital processes and digital distribution, and to be able to pass those cost reductions on to the financially excluded, the FinTech companies first need to acquire those customers. This is where the FinTech companies seem to face their greatest challenges in keeping costs down. In order to reach the lower half of the financially excluded segment, almost all companies speak of how a physical presence is essential to acquire customers, and several indications are made that such a physical presence is costly and requires capital to establish. Several of the companies even describe how the need for such a physical presence either completely, or to a large extent, restrains them from serving the lower-income segments.

The two companies who do not mention such physical presence requirement for acquisition are FinTech C and FinTech D. Acquisition cost is however irrelevant as a focus for FinTech C since they are not allowed to market themselves in any way, and only allowed to accept customers approaching them by themselves. Although not mentioning the cost of acquiring customers in the financially excluded segment as an issue, FinTech D do however indicate that this might be an issue for them as well, as they mention that their small scale is what hinders them from communicating with their customers in an offline mode. Among the companies who then have a physical presence on the ground to acquire customers, no company really speaks of how such customer acquisition could be done in a cost and resource-efficient manner, except from FinTech I. FinTech I explain how their high acquisition costs have been significantly reduced by partnering with companies possessing many employees who are financially excluded, and then offering these employees loans via the employing company. However, although being cost efficient, this method of acquiring financially excluded customers increases the affordability of FinTech I's services at the expense of their availability, as they then only become available to a selected group of individuals. Even though all the FinTech companies emphasise the need for a physical presence to serve the lower half of the financially excluded segment, it seems as none of the companies have found a viable solution for keeping acquisition costs down from the perspective of financial inclusion. Therefore, not only the question of whether FinTech companies are able to make financial services more affordable in the lower half of the financially excluded segment arises, but also the question to what extent they can make them available, as these high acquisition costs quickly eat up the low margins the FinTech companies operate with and therefore make it unviable to have a presence at all in the lowest income segments.

Emerging from the problem of keeping acquisition costs down in the financially excluded segment is the issue of what incentives the FinTech companies actually have to keep pursuing customers in the financially excluded segment. Only one of the interviewed companies (FinTech E) state that they focus solely on the lowest income segment of the Indian market. With their strong emphasis on usability and simplicity, the interviewed FinTech companies' solutions are understandably attractive in the higher income non-excluded segments as well, and the incentives for expanding down the market and dealing with the high acquisition costs might therefore not be as appealing as expanding upwards in the market instead.

To sum up, FinTech companies face a major challenge in improving financial inclusion in the high acquisition costs that are associated with the financially excluded segment. These acquisition costs seem to increase towards the lower end of the financially excluded segment, and none of the case companies seem to have found a viable and sustainable solution for how to deal with these high acquisition costs yet. Therefore, the question of what incentives the FinTech companies have to continue to serve the lower income segments of the economic pyramid, as they gain traction in the higher income segments of the Indian market due to the simplicity and high usability of their services and products, arises.

5.2.2 The Challenge of Increasing Financial Literacy

While seemingly being successful at increasing the availability of financial services and products, the interviewed FinTech companies do not really seem to be doing much more beyond that point. For financial inclusion to be sustainable, financial literacy is needed as well (Rajeev & Vani, 2017), and therefore, just enabling the financially excluded to start using services does not necessarily mean that they will fare well by doing so. This demand-side barrier to financial inclusion does however seem to be largely overlooked among the case companies.

The lack of focus on promoting financial literacy is evident as the interviewed FinTech companies seem to be using financial literacy and digital literacy synonymously. When asked about issues of financial illiteracy, the case companies state how they do provide education, mainly through mobile channels, about how to use their service and help customers if any problems using the service or product occur. The FinTech companies mainly point out how their services and products might be difficult to understand for someone who is not so technologically savvy, and how this makes it hard to switch from informal services as the incentives are not enough clear. Several companies also mention the worry of technology and trying new services among their customers as a challenge to acceptability. Basic things like contacting a helpline when something is wrong is stated as difficult for these people, hence a lot of focus have to be on communication between the FinTech companies and their customers. Therefore, the interviewed FinTech companies' efforts on addressing the lack of understanding of their products naturally become directed at addressing the lack of understanding of the technologies on which their services and products are based, and a couple of the companies even mention trying to spread awareness of the general benefits of digital payments as opposed to cash in order to reduce such issues. Hence the focus of the FinTech companies becomes centred around improving *digital* literacy rather than *financial* literacy, and it is not quite clear whether the case companies themselves acknowledge this difference.

The logic behind such a strong focus on digital literacy is however understandable. For many customers these services might be their first contact with digital financial services and thereby the FinTech companies need to emphasise the value of going digital. If the value and experience of using these digital services is not exceeding those of using informal alternatives, it could be difficult for the companies to make them switch from informal alternatives. As argued by FinTech D, if the first experience is bad, it will be very difficult to win the trust back as the acceptability is lost from the beginning.

The education and support that is provided about the case companies' services and products, and about the benefits of going digital, are mostly based on largely self-service customer relationships through digital channels in the form of app content such as video tutorials and FAQs, familiar social media channels such as WhatsApp and Facebook, or phone support, which might work for increasing the use of a specific service or product, but that likely is too little of an assisted customer relationship to be fit for effective provision of financial education. These efforts directed towards educating their customers are therefore not that exhaustive and are not really doing much more than educating the user on how to use the specific service or product in question, which has already been simplified to a large extent. There is however one exception, as FinTech I explains that by using data gathered through the app, they can help people who are rejected a loan at first to become aware of why they were denied a loan and, from there, continuously help them increase their credit score by tracking the customer's behaviour and telling him/her what behaviour is good and what is bad.

Overall then, it seems as very little is done to increase financial literacy among the case companies, and the education provided largely revolves around facilitating the use of the provided service or product. Being profit-driven businesses, it is however difficult to blame the FinTech companies for making such priorities. As mentioned earlier, with the local entities the case companies have in place within the financially excluded segment, they do have the potential to successfully provide financial education. However, as such a physical presence appears to be heavily resource-demanding with its high acquisition costs, the costs for providing such face-to-face education would likely be high as well. At the same time, since the FinTech companies merely act as bridges to existing financial products and services, one could argue that the banks and other financial institutions should take on these costs of increasing financial literacy instead or bring the partnership even further by committing resources towards these segments, as the one who can reach the most inaccessible customers will find a large underserved market.

Thus, there is a substantial risk that the actual issue of financial illiteracy remains being overlooked by the FinTech companies. While at the same time largely improving the availability and simplicity, and to some extent the affordability, of formal financial services, there is a risk that large parts of the financially excluded segment will be rushed into the formal economy without having the sufficient financial literacy. As pointed out by Karnani (2007), persuading customers with insufficient knowledge about the services and products that are being provided to start using them might lead to these customers spending their highly limited income on services and products that are unfit for their needs, and as pointed out by Shankar (2013), such mismatch between offerings and needs could lead to issues such as over indebtedness as well. Additionally, in terms of the lending space, the long-term effects of credit risk profiling based on alternative data are unknown and could potentially lead to high default rates in the long run.

To sum up then, a second main challenge for FinTech companies to improve financial inclusion, and perhaps the most critical one, is to go beyond just increasing the access to financial services and also address the issue of financial illiteracy. The case companies seem almost exclusively concerned with improving digital literacy in order to enable the use of their services and products. The education that is provided is provided in self-service relationships through digital channels and are centred around supporting the customers in the use of their specific services and products. However, while making formal financial services highly available and simple for the financially excluded to use, the inclusion of these financially excluded individuals and businesses could have serious implications if the issue of financial illiteracy is not adequately addressed simultaneously.

6. Conclusion

The concluding chapter aims to answer the initial research question and its two sub-questions by relating them to the analysis of the empirical findings. The two sub-questions will first be answered, followed by an attempt to answer to the main research question. Thereafter, the study's implications for policy makers are proposed. The chapter concludes by stating the limitations of the research and by providing suggestions for further research.

6.1 Conclusion

6.1.1 How do Indian FinTech companies' business models account for the barriers to financial inclusion?

Looking at the FinTech companies, a few aspects of their business models stand out in terms of their ability to account for the barriers to financial inclusion, namely having value propositions based on acting as intermediary platforms between existing providers of financial services and the financially excluded segment, having a combination of offline and online communication and distribution channels, having digital technologies as a key resource for reducing costs, and working closely with partners to enable the provision of services and products to the financially excluded segment. The FinTech companies have largely based their value propositions on increasing the availability of formal financial services by acting as intermediary platforms between the financially excluded and existing financial institutions. In order to do so, the FinTech companies base their platforms on digital technologies, and on mobile technologies in particular, which can reduce the perceived risk of poorly documented individuals, and also reduce inefficiencies in existing systems by being highly integrable, which overall lowers the costs of dealing with the financially excluded segment. By mainly basing distribution on mobile phone channels, the FinTech companies are able to circumvent many of the issues of poor infrastructure identified in the literature. Thereby, FinTech companies are increasing the availability of financial services and products provided by financial institutions by focusing on extending the reach of them in risky environments by acting as a legitimising interface between the financially excluded and financial service providers, and by focusing on reducing the complexity of them where there is lower risk. Due to these efficiency gains and risk reductions derived from digital technologies, the FinTech companies are able to create large cost efficiencies and thereby improve the affordability of formal financial services and products to the financially excluded segment as well.

In order to increase awareness and acceptability of their services and products, FinTech companies penetrate the financially excluded segment by tapping into local and informal social networks, leveraging local entities and to establish physical communication channels within them. To drive acceptability of formal financial services and products among the financially excluded, the FinTech companies rely heavily on increasing the simplicity and usability of their services and products so that they can compete with the preference for informal systems and reduce the need for financial literacy. Imperative for the FinTech companies to be able to succeed with all the aforementioned actions are partnerships. By the very nature of their platform-like business models, partnerships are often essential for the FinTech companies to be able to provide their service or product, and they also enable the FinTech companies to gain trust, reduce acquisition costs, and to access resources.

6.1.2 What will the main challenges for Indian FinTech companies to improve financial inclusion be?

The need for establishing a physical presence in the financially excluded segment causes high acquisition costs which none of the interviewed FinTech companies seem to have found a viable and sustainable solution to, which raises the question of whether they will stay incentivised to pursue the lower income segments of the market as they gain traction in the higher income segments. With their large focus on penetrating the financially excluded segment, the FinTech companies are often the first contact the financially excluded have with the formal economy, and entering this formal economy requires some level of knowledge and understanding for financial products. However, it is evident that not much effort is going into educating the financially excluded segment in areas that go beyond how to operate their simple service or product, as the education provided to the customers mainly is directed at addressing digital illiteracy issues in order to enable the use of the provided service or product. Hence, as the FinTech companies are largely increasing the availability of financial services and products while also focusing on simplifying these services and products, which therefore reduces the need for financial literacy, the FinTech companies' lack of focus on addressing financial illiteracy raises the question of what consequences rushing these financially excluded individuals into the formal economy, without ensuring their wider understanding of the implications of using formal financial services and products, will entail.

6.1.3 How could FinTech companies contribute to the improvement of financial inclusion in the Indian economy?

To conclude, FinTech companies will most likely be able to greatly improve financial inclusion in the upper half of the financially excluded segment in India, where acquisition costs are lower and financial and digital literacy levels are higher. In the lower half of the financially excluded segment, the high acquisition costs faced by the FinTech companies do however question their ability to actually provide sustainable and affordable solutions to the financially excluded segment. Even if the problem of acquisition costs is solved, serving the lower half of the financially excluded segment might in fact turn out harmful if the issue of their low financial literacy is not adequately addressed simultaneously.

6.2 Policy Implications

As stated in the purpose of the study, the results of this study could have important implications for policy makers that need to balance regulation of the emerging FinTech sector with the need to improve financial inclusion policies. What emerged from the findings of this study was that the FinTech companies are not adequately addressing the issue of financial illiteracy while they are simultaneously facing significant challenges in acquiring customers in the lower parts of the financially excluded segment. Thus, these findings impose implications for policy makers in India. As the economic incentives for FinTech companies to invest in providing basic financial education for the financially excluded segment are scarce, the burden to improve financial literacy in India still largely remains on the Indian government. However, as the study also indicated that the FinTech companies' business models possibly could increase the availability of formal financial services and products to the financially excluded significantly, the FinTech companies also present themselves as suitable partners for governmental bodies to provide the needed financial education through, as large parts of the financially excluded segment surely will get into contact with the formal financial system through these companies. Such partnerships could be mutually beneficent as they might help the FinTech companies lower the high acquisition costs that they face in the lower parts of the financially excluded segment, given that existing governmental infrastructure and networks could be utilised to some extent by the FinTech companies. Therefore, governmental bodies could create strategic alliances with FinTech companies to develop basic financial education that could be provided to the Indian population alongside, or even integrated into, the services and products of the FinTech companies. In return, the FinTech companies could lower their costs of creating awareness and acceptability, and thereby also increase the affordability, of their services and products by leveraging the reach and legitimacy of the Indian government. Thereby, incentives for the FinTech companies to engage in the lower parts of the financially excluded segment would increase significantly, and thus, financial inclusion could be accelerated as the lower half of the financially excluded segment becomes a more attractive market for the FinTech companies.

6.3 Limitations and Suggestions for Further Research

FinTech as a research field is still in its infancy, particularly in the context of financial inclusion, and many possibilities for future research studies exists. As a result of this research however, a few specific areas within the field of FinTech and financial inclusion have been identified where there exists a particular need for additional research. Firstly, due to sampling limitations, this study mainly studied FinTech companies that are active within the payment and financing areas of FinTech. The understanding of FinTech companies' relationship to financial inclusion could then be deepened by undertaking similar studies that include companies from other areas of FinTech. In particular, such studies could benefit from studying FinTech companies active within the area of financial advice, as the study indicated that FinTech companies might not address the issue of financial illiteracy adequately, and as it is possible that this type of FinTech company might have a greater impact on the level of financial literacy in the financially excluded segment.

Further research could also benefit from conducting similar studies in different geographies as the behaviour of the companies included in this study to a large extent seemed to be affected by regulations. As the Indian government however is placing financial inclusion high on their agenda, it is likely that the Indian regulatory and infrastructural environment is more favourable for FinTech companies operating in the context of financial inclusion than in other regions where the issue of financial inclusion has not been as prioritised. Therefore, similar studies undertaken in regions where the regulatory and infrastructural support from the government is not as strong might escalate the concern of the economic viability in the lower half of the financially excluded segment, indicated as a major challenge in this study, to a concern for the entire financially excluded segment.

Lastly, as the study found that the FinTech companies were mainly concerned with how they could increase availability of their services and products in the financially excluded segment by reducing the complexity of their services and by increasing the financially excluded segment's ability to use them without really addressing the issue of financial illiteracy, it could be of great importance to study what effects this rapidly increased access to formal financial services will have on the financially excluded segment in the long run. Therefore, longitudinal quantitative studies could be undertaken on an individual level to study the effects that access to the services and products provided by FinTech companies have on the financially excluded segment over time. These studies could more specifically look at how the level of financial literacy develops over time as access to FinTech-provided financial services has been gained, but also on how increased access to credit, as a result of credit risk profiles based on alternative data, among the financially illiterate affects them economically over time. As these individuals do not have any experience or knowledge of formal credit products, such access could potentially lead to over-indebtedness or high default rates in the long run.

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Appendices

Appendix A - Interview Guide

Background
1. How would you describe your business model?
2. Could you describe your main customer segments?
3. Could you briefly describe your product/service and how it works?
4. How does your product/service differ from other similar financial services provided by traditional banks and financial institutions?

General questions of financial inclusion
5. Could you describe what financial inclusion means to you?
6. How do you believe that your company contributes to financial inclusion?
7. What value do/could your product/service bring to the financially excluded? Does it address any unique needs?
8. Are partners important for you to be able to do business in the financially excluded segment? If yes: Who? In what way are they important?

Affordability
9**.** How are you making the acquisition and use of your product/service affordable to low-income customers?

Awareness
10. How are you working towards increasing awareness of your service/product in the financially excluded segment? What communication channels do you use?
11. How is illiteracy, and financial illiteracy in particular, affecting your ability to communicate with the financially excluded?

Availability
12. How do you make your product/service available to the financially excluded?
13. Do you believe that there are any difficulties in reaching the financially excluded caused by a lack of distribution infrastructure? By a lack of personal documentation? If yes: How do/could you address these issues?

Acceptability

14. How do you increase the acceptance/trust for your product/service among the financially excluded?

15. How do you deal with the issues of a preference for cash and informal financial services among the financially excluded?

Perceived challenges

16. What do you believe the main obstacles for FinTech companies to improve financial inclusion will be?

Wrap-up

17. Overall, what would you say the most important activities are for successfully doing business in the financially excluded segment? Which resources?

18. Is there anything more that you want to add that we have not discussed?

Appendix B - Empirical Evidence

1. Customer Segments

1.1 FinTech A

When asking FinTech A about their main customer segments they describe a variety of segments to which they provide their services: *"the small mom and pop shop... it can be any small merchant on the street.. then in the e-commerce... non-banking financial institutions... we have done a lot of integrations with very large enterprise customers".*

1.2 FinTech B

FinTech B describes having a variety of different customers. They divide these into four groups:

"One is the huge government organisations, small to huge government organisations... The second customer are enterprises, huge businesses... small and medium sized businesses come before retail. That's the third segment for us... (fourth segment): *The smaller customer segments are retail, which are more segregated ones. These are merchants, these are shops, they are individual shops, or it could be and individual merchant."*

1.3 FinTech C

FinTech C who facilitate identity authentication and KYC solutions have a range of financial institutions as customers: "*So all banks, non-banking financial services, insurance companies, telecommunication companies, anyone who wants to verify customers.".*

1.4 FinTech D

FinTech D describe their main customer segment as:

"our target is these really small and micro businesses... On an average, a business on FinTech D would be doing around 25 000 - 30 000 dollars on an annual basis. That is the average that we see across these categories, right. At a smaller level it goes down to as small as maybe about 5 000 dollars. At the highest end it could be maybe a few millions.".

1.5 FinTech E

FinTech E serve individuals at the absolute lowest part of the pyramid: *"they have an index called CRISIL Inclusix which rates every district in the country based on their access to credit and other banking services etc. So if you go by that, 84% of our borrowers are in the lowest category in terms of inclusion score."*

1.6 FinTech F

FinTech F state that the lowest segment of the economic pyramid requires a physical presence and that they therefore do not target that segment: "*I don't think that we are really targeting that segment yet because that requires some physical presence on ground."*

They also mention how customers need some level of financial literacy to be able to use their service as, when asked how they deal with financial illiteracy, they answered: *"I don't think we have gone to that segment yet".*

FinTech F explain that they instead focus on the lower middle-segments that do not have good enough credit score or totally lack a score to be served by banks which makes this a better opportunity for them.

"*our main target segment I would say would be the people within a bureau score of 650-720 who a regular financial institution would not give them a loan very easily. And then there is the new-to-credit, a low bureau score, it is also unlikely that we will provide them a loan because they become very high risk. But someone who is new to credit and have some sms data to risk profile, that would also be a target segment for us."*

1.7 FinTech G

FinTech G describe their main customer segments as: *"We have what we call a retail focused business... aggregate retailers and empower them with a digital payment solution",* and when speaking of their mobile wallet they state that:

"So we are not focusing as much on the direct consumer space but rather pivoted this mobile wallet solution by going to factories... provide them a mobile wallet attached to a card, a RuPay card… so we are talking about factory workers and, you know, that segment of people who receive small amounts of salary in a bank account but are unable to open bank accounts, so we are digitising their entire process so that using the mobile wallet plus the card they're able to avail the same, you know, bank account like services at their fingertips."

1.8 FinTech H

FinTech H state that they have built a large network of small businesses customers and that these customers are at the lower end of the economic pyramid:

"We have built a network in about 10 states now, in 280 towns across south and west India, and about 50 000 small merchants or mom and pop stores have signed up with us… It's typically a 8x12 feet store… Not the bottom, but definitely at the lower end. They are at the bottom to middle end of the business pyramid.".

1.9 FinTech I

FinTech I explain that they focus on what they call "*the next billion*" which is the second lowest level in an income-pyramid of five levels:

"so we have Elite, Affluent and Aspirers. Aspirers are anything between 7.7 thousand dollars to 15.4 thousand dollars, I'll share this proof with you, it is very interesting. Below aspirers is what we call the Next Billion. The Next Billion is anywhere between 2.3 thousand dollars to 7.7 thousand dollars a year per random. And then there is strugglers which is the bottom. These strugglers are anything less than 2300 Dollars per year salary... what we want to do is we really want to bring 'the next billion' into the credit system, which are the true excluded people."

1.10 FinTech J

Speaking of their main customer segments, FinTech J state that:

"So we have retail as well as payment use cases so our customers would be anyone who is making payments and retailers so that they can reach their customer… our product is developed in such a way so that it can be easily adopted across all segments of retailers. So when I talk about financial inclusivity, it won't be complete from FinTech J's perspective if we don't include the small and merchant mass-retail place. So like T said, any segment that can use a smartphone is initially a target segment for us. So a small player, a small retailer, a mom and pop shop, to the major brands, like X who are already there in our platform. So any kind of retailer who have a smartphone can be a FinTech J merchant. So we cover the entire spectrum of merchants."

and that: "*We tie up with banks and enable digitisation, digital payments. So any kind of bank who has a core banking solution can take our SDK and enable all close proximity use cases."*

2. Value proposition

2.1 FinTech A

FinTech A provide a point-of-sale (POS) device that enables their customers to accept card payments via a POS device regardless of what bank they have an account in. They describe the logic behind such an unbound POS device as:

"*there are some 40-45 banks in India. Maybe some 6-7 banks - max 10 banks - could provide a POS to their customers… If I'm a merchant and have a current account in some other bank which does not have a POS service, then I have to consider opening a new account with another bank to get a credit card service."*

2.2 FinTech B

FinTech B's value proposition is that they enable their customers to accept payments from various other payment solution providers and remove the need for these small merchants to possess each payment mode individually:

"*FinTech B is that one platform that any business in India, no matter what the scale is, can come to and say: "Hey, we want to enable our customers to pay through this payment mode"... the option would be to accept all those forms of payments separately"*.

FinTech B clearly describes the benefits of such a solution by explaining that the payment modes in India as diverse as "*cash and check reconciliations... Aadhaar, UPI, cards, SMS-pay, QR-code payments, mobile wallet payments",* and that in mobile wallets alone there are around 25 different providers. FinTech B further describes how acting as a platform they "*remove all those efficiencies"*.

FinTech B mentions that one important feature of their software is that it can be integrated into POS devices provided by other companies so that it then can speak to FinTech B's platform:

"*For example, tomorrow if a merchant comes and tells me that he's got a Verifone device but they want our software because Verifone is just a machine by itself. A machine without it's software is not smart. So we try to make that terminal smart by trying to get that POS-terminal to talk to our software platform, which then helps that business accept payments from their customers."*

2.3 FinTech C

FinTech C have taken a place between existing financial institutions and their customers by simplifying the KYC process using alternative data such as biometric data. By doing so, the value that they provide is that by acting as an intermediary " *we are trying to get everybody to come onto this form of banking systems"* by "*helping people open bank accounts*.".

To do so, FinTech C describe how they integrate with financial institutions by making it possible for them to offer FinTech C' app as a an option for the KYC process for the financial institution's customers: "*So banks can now choose to sign up with you directly saying, FinTech C' app is providing me these details, I can now use your API to do it, or they could say, you build that interface on our behalf."*.

2.4 FinTech D

Regarding their loan product, FinTech D describe how they facilitate the intermediation of loans from banks and NBFCs to the financially excluded:

"*So whenever someone on the FinTech D platform wants a loan, we essentially - as a platform - we are able to connect them with, you know, these entities who look at their data and documents and are able to disperse a loan.*"

and further explain that:

"You want to take a loan? yes. we make it really simple for you just click a couple of buttons provide two documents and your done. We make sure that the tougher parts are managed between us and the NBFC or the banking partners. But the money of course goes through them so essentially they lend money to these merchants. We facilitate the entire process, we aid in the collection of the loan, the repayment part of it, because these transactions are done through FinTech D so part of their settlements can be used to repay the loans. So that's another place where we facilitate the entire process. So essentially that's how we are involved so we are the intermediary platform in between party or aggregator which makes this really really simple for everyone involved."

FinTech D explain the rationale for doing so as: "*If you are not a bank or NBFC you can't really lend money to someone. So we have partnered with multiple NBFCs as well as banks for this.*"

To facilitate the intermediation of loans between their lending partners and the financially excluded segment, FinTech D provide the lending partners with transactional data which "*helps them to take a wiser call because they get data which wasn't accessible to them earlier.*", and are thus able to attract lenders who would not have lended money to this segment otherwise: "*it opens up a new market for companies who want to lend, because they were not able to lend earlier for all these reasons.*".

A further benefit from acting as a platform is described by FinTech D as: "*For a, say - a bank, or a lending partner for that matter, it doesn't make sense to give a small loan to one merchant, but if you aggregate hundreds of thousands of these, as a portfolio it makes sense for them.*".

Speaking of their payment solution, FinTech D state that their solution "*helps businesses collect payments online.*" by making it possible for their customers to "*pay with credit cards, debit cards, or any mode of payment, it doesn't matter.*", without the business needing to possess or understand any of these payment options him/herself: "*We'll manage all the technical complexity, we'll deal with licensing with the banks or Visa or MasterCard and any of the bigger player out there, that's a job left to us, we'll abstract out of the complexity.*". As a part of this, FinTech D integrates with other financial services providers:

"*we work with 70+ banks in this country... So we have an integration with all of them and we just expose one simple UI to the user or to the merchant, where you don't have to be concerned about how many banks there are and how you work with all of them, we'll take care of all the complexity there... There are multiple wallets in the country. We haven't integrated with all of them but practically all the relevant ones".*

2.5 FinTech E

FinTech E who provide a crowdfunding platform, have a value proposition that is not as clearly based on solely being an intermediary between existing financial services providers and the financially excluded segment as they have their own crowdfunding website. However, FinTech E describe that the crowdfunding taking place on their own website is not the only source of capital:

"*Have you heard of X?... We are their sole Indian representative. So when they disburse funds in the Indian market, they do it through us. So we have partners, and we sort of recommend them to X and based on a case by case approval they allocate credit limits to field partners of ours"*

Thus, FinTech E act as a platform for the financially excluded individuals in India to raise funds on one of the world's largest micro-lending platforms.

FinTech E further describe how alternative loan applicant data that they receive from these partners is formed into stories in order to increase the chances for funds being raised on their platform: "*So what happens is that these data points are weaved into stories a pool of volunteers and fellows that we have.".*

FinTech E goes on to further describe how they have integrated their systems into X's platform: *"we have also integrated with third party applications such as X's platform. So as X is our partner and we fundraise on their website, we are required to upload the same profiles on their website, on their own loan management portal.".*

2.6 FinTech F

FinTech F facilitate the intermediation of loans from banks and NBFCs to the financially excluded and state that they do so because they are not allowed to do so themselves: "*We have lending partners. To provide a loan you need to be registered like a NBFC where we can put in our capital. So if we are not a registered NBFC yet, so we work with other NBFCs and banks".*

FinTech F further state that "*There's an RBI mandate that every monetary transaction that you make, the bank is required to send an sms. It's like a security feature.",* and that "*based on the* *sms transactions, we create a risk profile.".* This risk profile is then used to determine whether a loan applicant should get a loan:

"So this gives us a much more wider sense of eligibility because we have the data on user transactions for us to figure out whether this person is credit worthy or not. So this is kind of where the financial inclusion part comes in, because low-credit score people who are not eligible for a loan outside from financial institutions can actually get a loan from us because we have a better sense of understanding of the risk for that person."

The decision of approval is then notified to the lending partner: "*So the way it works is that they trust our models and our assessments and then the loans are on their books.",* and that FinTech D's platform acts as an interface of trust for the small merchants: ""*you know this merchant is transacting on FinTech D, that is a certain extra element of trust involved over there".*

2.7 FinTech G

Unlike the other interviewed companies, FinTech G is providing "*any suites - suites of financial services."* themselves and are being seemingly independent as they describe how, by partnering with the card association RuPay, their mobile wallet could substitute the need for an actual bank account: "*using the mobile wallet plus the card, they're able to avail the same, you know, bank account like services at their fingertips.".* They also state that with the mobile wallet "*you can do pretty much everything… you can do your savings and apply for credit and, you know, make payments and insurance and all the other various financial services.".* FinTech G do however attribute this ability to provide various financial services to the fact that they became a business correspondent (BC) to one of the largest banks in India. Nevertheless, FinTech G describe how, before becoming a BC, they had built a large network of retailer for whom they:

"*we maintained the wallet for the retailer, so all these services were prepaid. So if they wanted to do a business of let's say $100 a day or month, depending, they would maintain a credit line with us by prepaying us and then they could, whichever product we had, they could pay for anything via that credit line that we gave them. It made life a lot simpler for the retailer, they did not have to maintain relationships with the 10 or 15 different operators, legal entities that they were, and they could optimise their, you know, what is it called, working capital"*

2.8 FinTech H

FinTech H do not provide loans to their customers themselves, but do instead intermediate loans provided by NBFCs: "*It's easier for companies like us to tie up with NBFCs to give out the loans"*, and the reason for this is explained as: "*they have an expertise in raising capital at*

8-9% and then lending it at 15-16% or whatever, making money through that rotation. So we would rather partner with the NBFCs and the banks and to be the platform for lending."

FinTech H explain that "*what happens is that the more transactions they (the merchants) do with us, obviously they are also increasing their digital footprint, and that data sharing with the NBFCs or the banks will enable them to actually secure credit."*

FinTech H further call themselves "*marketplace for credit to these small merchants"* and state that the data that is created increases the willingness of lending companies to lend money to these merchants: "*The more they digitally transact and create a trace, it's much more easy for the companies to come onto the platform and give them credit."*.

Furthermore, the trust that is built between FinTech H and their lending partners increases the chances for FinTech H's small merchant customers to receive loans:

"*A single retailer or consumer in a small town will not be able to talk to a NBFC or a bank. But when you have 10 000 of those on your network, you can strike a partnership and they combine into a network that then can benefit from like a shared platform"*

and that: *"We give them all our ratings and risk profiles and they say that "we will trust you", and we can point at a retailer, or 5 000 small retailers, and get them loans."*

2.9 FinTech I

FinTech I describe how they have lending partners that are the ones who provide the loans to to FinTech I customers, and that they have completely integrated their systems with these lending partners:

"*We have integration with about 9 large lenders, we push - so we integrate, my loan system and the other loan systems, completely integrated and seamless. We do a yes decision, we push into their system, it goes into their system, they will put the money into the customers account."*

They further state that they do so because the lending partners have an advantage in capital raising: "*they have what you will never have which is access to cheap capital."*.

FinTech I make their decisions regarding loan applications based on credit scores built on alternative data: "*we will go beyond just the regular data. We will go beyond just the bank statement or sms, we will collect all kind of data.",* and when asked whether the lending partners completely trust FinTech I' assessment the answer given was "*Yes, 100%.*".

2.10 FinTech J

FinTech J describe how they, by providing a SDK, enable different bank apps, mobile wallets and payment gateways to transfer money between each other:

"*We tie up with banks and enable digitisation, digital payments. So any kind of bank who has a core banking solution can take our SDK and enable all close proximity use cases... apart from app, there is one more use case where feature phone uses can also use it. So every bank has their mobile banking channel wherein the customer can dial a number and avail the banking facilities on the phone"*

and that:

"we are interoperable by the way. So there are a number of top payment players, payment gateways and wallets in India which only have to onboard in their application. When we started I told you that we are not app-focused or app-based, but that makes us interoperable. For example, you have an account in X bank, you can do a transaction, a FinTech J transaction, in my merchant. It doesn't matter whether you're using the same banking account or the same wallet… . We don't care what the account the customer is using is, what the merchant account is, right, we bring them to the same platform."

3. Channels

3.1 FinTech A

FinTech A explain how their POS device they provide to accept card payments access internet through a mobile phone's internet connection:

"If the merchant has a smartphone, they will be able to pair it with our POS and start transacting. So the POS will not have its own independent connectivity. It will kind of - it is paired with the merchants phone through Bluetooth and it will use the phone's connectivity to complete the transaction"

When asked about how the create awareness for their product, FinTech A explain how they gain new customers through a *"field force which go to the market to acquire merchants",* and that this field force also are putting up stickers on the shops of the acquired merchants to increase visibility for other merchants:

"It works in a hub and spoke model, so the sales team is the one who is kind of spreading awareness and then they also put a sticker on every shop door which actually work very well for us"

FinTech A further state that these sales force "*are local people, they know the area and topography well",* and when asked whether this is important for gaining trust among the financially excluded they answered: "*Yes, it will help in gaining trust also. The local people are known. That helps.".*

Lastly, when asked if they mainly apply an offline way of their customers, the answer was simply: "*Yes, exactly.".*

They do however describe how they also use communication through mobile channels to some extent:

"We have a helpdesk which the merchant can call and raise any ticket for any service issue. The merchant also have an option to download the FinTech A app and on this app he can just call support, it's a WhatsApp connect and he can just type in what is this issue. The helpdesk will raise a ticket on this one factor."

3.2 FinTech B

When talking about their marketing, FinTech B state that:

"So we do have a team which is an enterprise and government sales team, we do have a feet-on-streets sales team which actually goes to does individual retailers and the smaller ones. In terms of marketing we're reaching out through digital media campaigns, through Facebook, Twitter, at all of the social media we have a presence, we try to talk to individual people in terms of whatever our campaigns are for an individual or a retailer level, we have a lot of our digital campaigns going out to the mass audience through Facebook, Twitter, various social media, we have a lot of pamphlets, you know physical copies of pamphlets that we distribute, we go to various events which we now small retailers will come to."

Talking about how they distribute their service, FinTech B state that:

"*So we provide our solution in two to three ways. One is an integrated way in which you have an existing platform, or an app, or a billing system, where we integrate our software development kit (SDK) into your system, and your system is now able to accept payments, and within your system, you have an FinTech B payments page, and you also have the dashboard where you can see that so many payments came from so and so. The other one is a disintegrated payments solution where we say "Ok, you don't have an app", somebody like a retailer, somebody like a small business, "You don't have an app, you don't have a billing system. We will give you FinTech B's app depending on the kind of solution you have". It's not customisable, but we have solutions for various sectors. So we have an app, we give you that app, you can use it on your desktop, it could be Windows based, you can use it on an Android* *phone if you're an individual retailer, and you can access that app. So through that app you connect the device, accept any form of payment apart from cash and check ,which you can record directly in the app, and the app is like your view into all of the payments, all of the sales that you've got."*

FinTech B explain that by enabling their POS device needed to accept card payments to run on a mobile phone's internet connection, they circumvent issues of poor internet connection based on wire:

"They are mobile-enabled so now for example, all of India already have smartphones or they have phones with internet. Our mobile devices can connect with the mobile phone via Bluetooth and they can use the mobile internet... So by being mobile-based you can circumvent all of that. For example, there were already POS devices which were on the GPRS internet but they need wire. From that, we went wireless. Going wireless allows us to accept payments on the field in various corners as long as there is some form of internet there."

When speaking of the financially excluded segment, FinTech B state that *"India is still a very high-touch society. By high-touch I mean that unless you go to physically meet them, things don't happen."*.

3.3 FinTech C

FinTech C state that although they have distribution based on a mobile phone app, they are not legally allowed to market themselves and can only accept customers who are approaching them:

"It is something we would like to do but the regulator clearance has not come to us so it's still in assisted mode now. So what the regulator allow is that - okay they can use our app, but it has to be that you come to me and you tell me are you okay to open a bank account and then you go through that process.".

3.4 FinTech D

When asked about what channels they use, FinTech D emphasize that all the customer needs is a mobile phone with an internet connection:

"Just create a link and share that link with your customers... all you need is a mobile phone and an internet connection.. So yeah we leverage technology basically. I think we're to small a company today to be able to do more of offline".

3.5 FinTech E

FinTech E partner with MFIs and NGOs to handle the entire relationship with the borrowers, which is largely due to the need for a physical presence in the segment they target:

"the selection and filtration process of the end borrowers are completely left up to them because these organisations are from those communities and geographies so they understand the nuances of those areas the most. There is also a very high level of connection between the field officers and the end borrowers… They are also taking care of the operational aspects of actually disbursing the funds, collecting the funds, meeting these borrowers on a regular basis and kind of also educating them, talking about the benefits of savings or general financial literacy… these institutions are local people, they know the local language, they understand the culture, so in that way they are way more comfortable with these people vs, say, someone from Bangalore going out talking about these things because they would always perceive us as outsiders, whereas if its from the same district talking to them in the same language who understands their background etc., it is a more conducive environment for them to accept that information."

3.6 FinTech F

FinTech F describe how they believe that a smartphone is all you need to access financial products:

"So the flow of information using smartphones as a tool, it is like crazy in India, it has exploded, and we believe that that's the only tool you need to access financial products as well, because banks don't have distribution which an app can have, you can be sitting anywhere in India and apply for a financial product, so banks don't do that, they need a completely different network to do that. That's where we come in…They can do everything through the app, and if you apply all your documents on the app, within a few hours we could potentially disburse you the loan... our marketing is mainly through Facebook and Google, those two channels."

When asked why mobile phones is their sole distribution channel, FinTech F answered:

"Because our model is all based on SMS, so you need to have it on the phone… So long online has worked for us at our scale, maybe sometime in the future we will think of going offline, but right now online works for us."

FinTech F describe how they do not serve the lower income segment of the financially excluded segment as: " *I don't think that we are really targeting that segment yet because that requires some physical presence on ground."*

3.7 FinTech G

When asked about if mobile channels were used for communication, FinTech G answer that it is important but that they face challenges to reach the excluded:

"we try to avoid that piece of it but still we do a bit of it here and there depending on the strategic aspect of it. Otherwise it's through our partners who then either have a society or a group of people who are bound to that part and hence we leverage that."

When asked whether they need a physical word-of-mouth presence in the financially excluded segment, FinTech G answered: *"Yes"*.

Talking about their mobile wallet solution, FinTech G state that:

"we have a mobile wallet where you can do pretty much everything that I talked about on the retail point but in a self-serve model and you know - so you can do your savings and apply for credit and, you know, make payments and insurance and all the other various financial services."

They further state that they establish partnerships with local retailers so that they can access a physical word-of-mouth presence: *"So we partner with entrepreneurs... we give more emphasis on if they are coming from such, people who are part of that society*", and when asking about how they increase the acceptability for their services in the financially excluded segment, the physical presence through their partners is stressed once again:

"*working through these partners to spread the word, the other is mostly people within the society who are well connected and they have a rapple with the retailers where we are providing these services. So we, through the retailer, try and bring that acceptability and the trust factor for creating the acceptance, because most of the time, people are pretty okay with dealing with the retailers, and trust that retailer, so its a trust mechanism... So the retailer is the ones who say "why don't you do this, or why don't you try this its a lot easier, you don't have to go 30km 40km to a bank branch to do those financial transactions, I can do this for you etc"*

Lastly, FinTech G have their own feet-on-streets team, but also partner with local entities who acquire retailers:

"So we have of course our own sales team. We have feet-on-street what we call "FOS" that we have hired and then in turn hire these entrepreneurs who are retail management units and then they have their own feet-on-street who then acquire the retailers"

3.8 FinTech H

FinTech H explain how the centralisation of communication is important and that on can do so in two ways:

"So one thing that we have learned is that when you have to generate awareness amongst tens of thousands, hundreds of thousands of people, centralising communication is really important. If you decentralize communication, then the message is lost basically. So how do you centralise? One way is a call centre. So now, somebody sitting in our office can directly talk to the retailer and explain to them in their native language. Language becomes really important in India, everybody speaks a different language. The second way to centralise communication is through technology. So you could make a video, and we have an app, right, so he gets a centralised and standardised communication from FinTech H… What we believe the answer is is a model that digitises the small retailer. So it becomes a decentralised e-commerce network if you will. So we have 12 million small mom and pop shops in India and, you know, each of them can become a digital access point for services and products."

Additionally, FinTech H describe how they leverage existing informal social lending networks to penetrate new markets and state that:

"*So what FinTech H does is that we built the whole system on that and we created a supervisor, a partner who is in the town, who know these retailers, and he can give the credit and can collect the money after he purchases the goods. So the unorganised credit which was there in India from decades and generations back is also being taken into consideration in FinTech H in a more organised fashion."*

FinTech H further stress the importance of word-of-mouth communication and how, as one merchant become successful, the others want to join in as well, they explain this as "*the trading community in a town is very closely knit"*. FinTech H also use what they call local channel partners who knows the village and have established relationships there already.

"we have this infrastructure of channel partners. So in every town we appoint a channel partner who acts as our local partner in that town, and he typically goes out in the market and introduces the idea to the retailers… he should have relationships in the network. He's already like a distributor of various products in the town."

When asked if these local partners is how they penetrate new towns the answer was simply: "*Exactly"*.

Lastly, FinTech H conclude that:

"*you need to recognise the fact that their habits require a human interface, plus a digital interface… pure technology solutions are not enough. They won't solve the whole problem. What works, unfortunately, is a slightly more complicated operational + human + technology solution.".*

When mentioning how their services are distributed FinTech H answer:

"*So the moment we give them an app which enables them to do a variety of different services, like he can do a travel, he can do a digital recharge, he can do a bus booking can do the DTH satellite, he can reload his TV services, so these are the services which he does, and he can also buy from the app. So we are like trying to be the Amazon for all the retailers, enabling them to do much more beyond their capacity.*"

3.9 FinTech I

FinTech I, who are app-based, state that 50% of their marketing is digital marketing the despite the high costs to do so:

"One of the main labors of digital is: how can you keep the operation costs low? Otherwise you become another bank. You can't have people who are calling in all the time, that's our model, its on the system on the phone through the app… So we have a strategy where one, we are doing digital marketing which is never going to go away, but you have to control it, you have to cap it. Which contributes today of 50% of our business."

The other 50% is done through physical channels, and FinTech I have a slightly unusual strategy for accessing these informal social networks:

"we go 1 to 1 target with corporates. These corporates could be large automobile companies employing 3000-4000 people. It could be export houses, manufacture exports, it could be large restaurants, it could be security agencies, hiring 3000-4000-5000 people… we met their financial officers, and we told them that, your employees, number one, you have to give them loans because they are not getting it from the bank, that means working capital blockage, secondly people are taking loans from loan sharks and getting in debt traps which automatically means people are not going to be happy, their productivity will suffer. So we are okay to give loans to your employees... what we want in return is that we want to have contract deal with you where we should be able to run campaigns inside the factory, we should be able to put posters in the cafeteria and the common areas - they will get to know about FinTech I, we will set up wireless kiosks where people can come and download our app, and if anybody applies for a loan from your company, please validate the data of that person.".

FinTech I further explain how they distribute their service through a mobile app:

"Our way you just download the app, the app is in your language, it's a very simple, straight forward app, very simple UI and UX, as taking loans in India is still considered taboo, you don't want everybody to know you have taken a loan. So it's very private applying for a loan, you get the money to your account and you, and you can quietly pay."

3.10 FinTech J

FinTech J provide their service by being integrating into various mobile apps or even by solely using a mobile phone's default software:

"*Ours is mostly a SDK. It can be integrated with different kinds of apps. It can be integrated with apps… apart from app, there is one more use case where feature phone uses can also use it. So every bank has their mobile banking channel wherein the customer can dial a number and avail the banking facilities on the phone. So the bank can take this technology and integrate it into their phone banking. So being a feature phone customer, all I need to do is to dial my banking number, which I dial to know my balance or transfer funds or anything. So I just need to dial the banking number and bring my phone close to the merchant device. The merchant device can be anything, a card swiping machine, it can be a phone, it can be a pod which we have created. So he just needs to dial the number and bring his phone close to the device and confirm on his feature phone."*

By being integrable with apps, FinTech J thereby also gets promotion through the third party app providers:

"*the customer is using the bank application, and within the bank application, FinTech J is sitting. So the banks that we partner with, they do the promotion*".

FinTech J emphasize that attracting new customers in the financially excluded segment could be very difficult and that sometimes nothing works unless they actually get to see for themselves: "*So nothing can convince them, no amount of marketing, no communication, nothing can convince them unless they actually use it and that they see that they are not losing money, that it's fine and absolutely OK"*

4. Customer Relationships

4.1 FinTech A

FinTech A describe how they help their customers if they face any troubles with their service through digital support modes:

"We have a helpdesk which the merchant can call and raise any ticket for any service issue. The merchant also have an option to download the (FinTech A) app and on this app he can just call support, its a WhatsApp connect and he can just type in what is this issue.".

Further, FinTech A use a fieldteam who help their customers set up and train the merchant to use their service "*we have a service team who will go to the merchant and then he will go and train and kind of deploy the device business outlet"*

There is also activity-tracking in their POS-devices which enables outbound support to increase incentives or engage the customers to use the services further. FinTech A describe how they can contact merchants to see why the transactions have decreased.

"Basically we have the transaction data of all the terminals,.. if that terminal has been dormant for awhile etc. Or the transactions have dropped over the months so we kind of get into the details of that and try to resolve that issue."

4.2 FinTech B

In terms of customer relationships, FinTech B describe how they have an app which their customers can interact with:

"*we give them an app on their phone which is integrated to a device, which means that if they are recording all the payments in cash that they collect and any of the digital payments that they are collecting, if all of that is recorded on the FinTech B device, than they can see all of that on the data dashboard in the app that FinTech B is providing."*

Except from the app, much of the customer relationship seems to be managed through social media and the digital space:

"at all of the social media we have a presence, we try to talk to individual people in terms of whatever our campaigns are for an individual or a retailer level, we have a lot of our digital campaigns going out to the mass audience through Facebook, Twitter, various social media, we have a lot of pamphlets, you know physical copies of pamphlets that we distribute, we go to various events which we now small retailers will come to."

4.3 FinTech D

FinTech D talk about how they try to educate their customers of the benefits of coming into the "*digital fold"* and start using digital modes of payment instead of cash, but also that they do not really think that their education efforts matter:

"*Today, what we tell them is "Yes, you know, if you come into the digital fold, if this is something that goes into a bank account, tomorrow your bank will ask you questions "will you pay tax on this", which is fine, you lose out some money but there is a bigger picture, right. You weren't really doing a structured business earlier, you weren't growing your business earlier because you didn't want to be accounted for it. Do you for example want to keep 100% of what you earn but that 100% being so low, or do you want to keep - let's say that maybe 25-30% will be paid in taxes but with an overall pie that is much bigger, what would you prefer?". So you know, that's some kind of education effort that we have to put in and it's been a difficult job, it's not easy, because some go these things, they've been using cash for example for years or decades. It is not something which have just come up, so it's very difficult for them to change their mindset. But I think that over time it's not just us, I think we're too small to say, you know, that we've made a big difference".*

When asked about how they provide this education, FinTech D answered:

"*Most of it is online. We do things like newsletters and email campaigns, we have a blog, we engage with them in all these channels like Facebook and, you know, others, we do Youtube webinars, so I think one or two are supposed to happen this week. So yeah we leverage technology basically. I think we're to small a company today to be able to do more of offline or TV campaigns, that's not something that we are yet. At a certain scale we would be able to do those, but today it's all digital primarily. "*

FinTech D further argue that the first experience has to be good to get new customers to adopt to the service which puts more pressure on usability and understanding *"If your first experience is so bad, you never go to this again especially as a new person, you never try it again. I think that initial exposure has to be really good and that has to be something that everyone sees a as benefit."*

4.4 FinTech F

FinTech F describe their customer relationships as:

"For us engagement start post somebody installs the app. From there we will help them with support and if someone is stuck they can write to us and we have phone support, we talk to them and help them through the process. Just by the nature of our targeting we are getting users who have some experience with using an app and they are going and searching for a loans app and then they download it and then it's not that people find the process seamless, they do struggle and at that point we help them out."

4.5 FinTech G

Speaking of their mobile wallet, FinTech G describe how it is designed to be a self-service solution:

"we have a mobile wallet where you can do pretty much everything that I talked about on the retail point but in a self-serve model and you know - so you can do your savings and apply for credit and, you know, make payments and insurance and all the other various financial services."

FinTech G also mentioning having initiatives in educating the financially excluded, which they call CSR initiatives: "*We do a lot of CSR initiatives also… for the literacy piece of it."*

FinTech G also explain how their retailer partners play a role in managing the relationship with end consumers and educate them about the benefits of digital payments instead of cash:

"*So our retailers act as that bridge too convert this cash into the digital economy and then making those service available to the end consumers, enabling those retailers with those Aadhaar services and being able to open accounts or get a debit card of sorts and deposit money. So the retailer is the one who say "why don't you do this, or why don't you try this its a lot easier, you don't have to go 30km 40km to a bank branch to do those financial transactions, I can do this for you etc. So that's what is gonna help.... that last mile connect is going to play a key role in educating the people as well as making them more comfortable with more and more digital services"*

4.6 FinTech H

To handle their customer relationship with the financially excluded, FinTech H describe how they have developed an app:

"*We have an app, right, so he gets a centralised and standardised communication from FinTech H.",* and that in this app their customers can access: "*quick help videos, FAQs… how to place an order…taking them through the entire workflow… It's very simple, right, go here go there... that's the app itself. You have training offers, various kinds of products, different brands, you can do mobile recharge, flight bookings. So these are all digital services that are available through the app. So anyway, that info centre I think is a big part of how we try to educate and generate awareness.*"

FinTech H explain the rationale for centering their education and information in this app as: *"when you have to generate awareness amongst tens of thousands, hundreds of thousands of people, centralising communication is really important"*

In addition to the app, FinTech H also mentions having a "*call centre that we have that speaks seven different languages. And that's important, right... So now, somebody sitting in our office can directly talk to the retailer and explain to them in their native language."*

4.7 FinTech I

FinTech I mainly manage their customer relations through their app and via phone contact. The app is further being described as being an important mode to educate their customers in financial literacy:

"we solve that problem through the app, what we do is that once you have given us access to all these data points, the first thing, you can only apply for a loan with us once you have generated a credit score...so when we get them a score, and there is a guy who got 40 out of 100, he also get a report telling him or her that this is where you are doing wrong and this is where you are doing a good job. And this report is generated in 6 different languages, including english and Hindi, maraki, tamil, India is a very very diverse country. We have close about 30 odd national languages. So our idea is that, to make sure that the credit is democratic, there is no mystery in credit, credit is your birthright. You should be knowing what has gone in building my credit report."

When asked how the guidance towards better credit works through their app, FinTech I answer:

"It is completely automated, everything happens in the app. Because one of the things of digital - one of the main labors of digital is: how can you keep the operation costs low? Otherwise you become another bank. You can't have people who are calling in all the time, that's our model, its on the system on the phone through the app"

FinTech I also mention how they call their customers up if they see that they are not adhering to the suggested actions: "*We have assisted mode, we call our customers to find out why aren't you finished with that process, what is your concern?"*.

4.8 FinTech J

FinTech J explain that as they are functioning as an SDK that integrates into other service providers solutions, their partners manage most of the relationship with customers. They do however state that they try to educate people about the benefits of sound payments and how it contributes to financial inclusion:

"*So from a marketing point of view you will see that we, being a SDK, we sit in our partners' applications, whether it's a retail store or a banking application, so most of the promotion banks do. We don't promote as in "Ok, make payments from FinTech J" because the customer is - suppose Bank of America - so the customer is using the Bank of America application, and* *within the Bank of America application, FinTech J is sitting. So the banks that we partner with, they do the promotion, and the retailers we partner with, they do the promotion towards their customers. You know, all the marketing activities, sending messages, newspapers and everything. From our side, what we do is that we talk about the benefits of sound technology, so that marketing we do."*

"*When the customer uses it for the first time he will know the difference. But to bring the customer to use it the first time, that communication is required, like, why you should use sound. So most of the communication that is happening from our company is by sound payments, the benefits of sound, why this technology is different, and how it's enabling everyone and bringing everyone into financial inclusion."*

5. Revenue Streams

5.1 FinTech A

FinTech A charge a monthly fee for their service: *"our fixed rental which is like 350 Rupees a month, you can just take this machine and start transacting"*

They also have an income from the sales of POS-machines, which are lower priced than competitors' options:

"We are able to offer this proposition because the terminals that we kind of offer are low cost, normally an Ingenico or a Verifone terminal will cost somewhere around 150 Dollar, and ours would be like under 50 dollar."

5.2 FinTech B

FinTech B charge a monthly fee and argue that monthly fees allows their customers to make infinite amount of transactions to a fixed price. The fee is however adjusted depending on what additional services such as collection of data and insights that the customer need:

"AMEX charges around 4% and Visa and MasterCard around 2.5% So if I make a purchase of, say, 100 rupees through a card, I have to pay 2.5 rupees to them, whereas in Company Y, we don't do that. Like we said before, we have a SaaS model where, no matter how many transactions and whatever the volume of transactions has been, we only take from them a monthly retainer and it can be as low as 150 rupees… We also give them certain dashboards, which means that they can look at the data in a certain format. We are providing them that additional service depending on if they need it, they pay for it. Again, the subscription fee ranges in terms of what kind of services that you want."

5.3 FinTech D

FinTech D charge transaction-based fees and call this a "*success-based model":*

"So we don't charge businesses an upfront fee as a setup or maintenance or something, we don't do that. It is what we call a success-based model. If you transact, we also make money with you, if you don't transact, we don't make anything, as simple as that."

Apart from their payments service, FinTech D also have a lending service which has pricing based on risk. The risk assessment is based on the transaction data that their customers accumulate on their platform:

"so over time, if you've been a business on FinTech D for the last year, in those 12 months, we're able to see how your business has grown, how you have been transacting, if your customers are happy with you, are they coming and filing for disputes or you know, creating issues about the delivery of products and services. That helps us develop scoring and building and building some trust with you. So we use that over time to lend money to you."

5.4 FinTech E

FinTech E charge a simple interest rate on the loans they provide to their MFI and NGO partners:

"We charge a service fee of 5% and we also charge an interest rate. The 5% service fee is an upfront fee which is charged at the time of disbursement and the interest component would be over a period of time. So typically our interest rates to our partners vary between 5-13%, whereas if these MFIs where to approach a commercial bank they would be paying anywhere between 18-25%. "

5.5 FinTech F

FinTech F explain that they are using a risk-based pricing method:

"So the business model is that users apply for loans, we have a risk-based pricing. We bucket users into different risk groups, and the duration of the loan, the amount and the interest charge is based upon which bucket they fit into."

5.6 FinTech G

FinTech G state that they get a share from the transactions made through their solution:

"*So in most services, we get a share from the service provider or the bank for doing the transaction… we get like, you know, a margin from either the service provider/bank and we pass the majority of that margin to the retailer. That's how the retailer makes money."*

5.7 FinTech H

FinTech H describe how their NBFCs partners set the interest rate on the loans they provide via FinTech H's platform: *"So the interest and everything happens through NBFCs. So it is a set interest rate here"*

5.8 FinTech I

FinTech I describe how they use their own credit score and based on this, they choose the partner who can provide funds at lowest interest rate based on the risk of default of the customer.

"what we do is we do risk based pricing, if their FinTech I-loan score is high, and you will be meeting criteria, I'll put you on a book of a bank because banks cost of capital to me is lower and lower interest rate. If your FinTech I-loan score is low, that means that perceiving you as a risky customer but a customer good enough to give you a loan but the assessment of you is a little high, then I put you in a book of a non- banking company where the cost of capital might be slightly higher that's how we work here. So its a pure risk based pricing"

5.9 FinTech J

FinTech J talk about how they get a small share of each transaction from the retailers: *"For the retailer there is a very minimum charge for the transaction."*

6. Key Resources

6.1 FinTech A

FinTech A describe how their POS devices are cheaper than alternatives on the market:

"*the terminals that we kind of offer are low cost, normally an Ingenico or a Verifone terminal will cost somewhere around 150 Dollar, and ours would be like under 50 dollar… this works out much cheaper from them."*.

When asked how they are able to be so much cheaper than alternatives, FinTech A answered that basing their POS devices on mobile technologies enables lower costs:

"*Basically we start to go to market with what is called mobile pos now. If the merchant has a smartphone, they will be able to pair it with our pos and start transacting so the pos will not have its own independent connectivity. It will kind of, it is paired with the merchants phone through bluetooth and it will use the phones connectivity to complete the transaction"*

Lastly, when asked what would be a key resource for being able to do business with small merchants the answer given was: "*Our terminals, low cost terminals which lower the cost of everything."*.

6.2 FinTech B

When asked whether they believed that they lower the costs for small retailers by allowing all types of payments to go through their platform FinTech B answered:

"A lot of it. Inefficiencies where there in the system before digital payments came into play. For example as I said before, there used to be multiple visits to a customer location simply to collect the cash or the payment because they wouldn't have change, the delivery boy wouldn't have change, there would be a lot of hiccups in the system. But because of FinTech B, all those inefficiencies that where there before are eliminated now."

6.3 FinTech C

FinTech C were asked whether they believe that their product make it more affordable for people to open bank accounts: "*Exactly, which is what we are trying to do. so its more simpler, more affordable, more transparent"*

6.4 FinTech D

FinTech D believe that having a loan product built on data "*should reduce the cost for sure"* for their customers, and talking about what the alternative for the customers of their data-supported lending product is, FinTech D say that they focus on how to build their credit history:

"*So many of them would not be eligible to get any kind of financing. The only way you would be able to raise money in terms of small loans or debt is by going to sharks, which is extremely expensive and it defies the entire purpose of why you want to do it, right, because the amount you end up paying is way more than the end benefit that you derive from it. So how for example can this help you to build a credit history which ensures that tomorrow you can take a loan from a bank or any other party out there at a much better cost, which can also help you in growing your business."*

6.5 FinTech E

FinTech E, who is just one of several sources of funds for their MFI partners state that they are cheaper than the other sources because their platform is built such as:

"*these loans are not collateralized loans, which means there is no mortgage, no anything. So for non-collateralized loans, the interest rates that banks would charge would go up, which is something that we are able to circumvent because of how we raise our funds. Because the crowdfunded money on our website is quasi-equity because the money that comes into the* *system has a 98% chance of staying in the system… So in that way, the funds that we raise on our platform stay within the system and it kind of creates a multiplier effect."*

6.6 FinTech F

FinTech F state that they are able to achieve scale economies which banks are not able to achieve because they are based on digital technologies:

"*Banks need to have a physical verification and somebody needs to fill the form then look through all of it so I believe being a completely digital process cuts down our costs significantly. The cost of processing a loan for us vs a bank, our would be much lower."*

6.7 FinTech H

FinTech H simply state that due to the transactional data that is created on their platform, the loan product becomes more affordable than informal alternatives and their customers are:

"*That's something that FinTech H does. It acts as a platform which solves both commerce and credit and payments. So with FinTech H the retailer can not only get access to the full range of P&G products, but also be able to pay digitally and conveniently on the platform using a wallet, and also get credit, and digital credit, you know formal credit, not informal or unorganised credit which tends to be expensive and not available to everybody frankly. So I think standardising payment able to pay digitally and conveniently on the platform using a wallet, and also get credit, and digital credit, you know formal credit, not informal or unorganised credit which tends to be expensive and not available to everybody frankly."*

6.8 FinTech I

FinTech I describe how they have based their product on mobile technology so that they can easily circumvent infrastructure-related issues, of which one is costs: "*Today i can access a guy sitting in a remote corner of India and be with him and he knows about FinTech I because of the mobile phone.",* and that they further have focused on making the app possible to run on even the cheapest phones on the market:

"it is a very small app, like 5MB app, which is optimized to operate at the lowest network... It's an Android app. We don't have an iOS app, because my target market does not have iOS, my target market has a very cheap 20 dollar Android phone. They don't even have a fancy Samsung galaxy kind of a phone, it's cheap, 20 dollars-25 dollars mobile phone Android app. So our entire testing of the app happens on that 20-25 dollar and if it works on that, it will definitely work on a better phone like Motorola or a Samsung. And also the app has to be small, because the memory power of these phones is very less.".

6.9 FinTech J

FinTech J describe how the "retail pod" they provide to small merchants in order for them to be able to accept payments by sound is very cost effective and that their model therefore is very scalable:

"*So the product that we have developed, the retail pod, which is a very cost effective product, the cost is so less that any mom and pop shop, any Kirana shop can afford it… we have built a model which is very scalable. The cost is very cheap. In comparison with an EDC machine it is not even 1/10."*

The low cost of their product is explained as:

"*we do not need to build any inbuilt keyboard, it's easily - can, you know, be added to already existing POS softwares, right, so that is how we've built this product and because we have developed it in-house, and economies of scale are also one of those factors."*

7. Key Activities

7.1 FinTech A

FinTech A contrast their POS device solution to the ones provided by banks, saying that "*a bank would ask him saying that you keep so much of minimum balance in your account, you have to do this many transactions in a month"* whereas FinTech A only requirement is that the merchant pay a fixed monthly rental. FinTech A also describe that some merchants prefer FinTech A's device because it is "*much more handy"* than other POS devices.

7.2 FinTech B

FinTech B state that "*we have simplified the solution for them, allowing them to go basically just digital by giving hem a single device, a single app, making it very easy*".

7.3 FinTech C

FinTech C describe how complex the process of opening a bank account is and that because of this, people often have to turn to the services of informal middlemen that helps them with the process of opening an account. Talking about their solution, he says that "*it's more simple, more affordable, more transparent, and they can do it on their own. They don't need these middlemen on their behalf."*. They further state that by providing this type of service through a mobile application, they have to deal with the problem that people with no formal education that are not technologically savvy might struggle with doing more advanced things on their phone, but state that they solve that issue by simplifying their app:

*"*FinTech C: *So most of the time the app is not working because they have not bothered to touch a button, because they don't know that there is button that exists that would actually do*

the function for them. Interviewer*: How do you solve that issue?* FinTech C*: Well, we remove that button. So its like were getting to level where it's effortless for them."*

When asked whether they believe that simplifying the process of opening an account reduces the need for the individual to be financially literate, FinTech C answered: "*Sort of, which is our goal."*

7.4 FinTech D

FinTech D describe how the underlying foundation for their business was to make online payments simpler:

"What we thought was: can we make this simpler? Can we make this process as simple as sharing a link?... we want to make it simpler… you don't need no technology at all, you don't have to have a website or an app in the first place, just create a link and share that link, I think that's something everyone can do.".

They further describe the alternative to their solution, which involves the processing of documents at a bank, as not "*worth the hassle"* for small merchants and that their solution therefore "*opens up a new market for these merchants".* Moreover, FinTech D speak of the benefit of their service to the merchants: "*you don't have to be concerned with how many banks there are and how you work with all of them, we'll take care of all the complexity there".* Speaking of their loan product, FinTech D says that

"*We make it really simple for you just click a couple of buttons provide two documents and your done. We make sure that the tougher parts are managed between us and the NBFC or the banking partners."*

and also state that by simplifying these processes, it increases the acceptance for formal services instead of informal, that illiteracy barriers are "*being broken down",* and that it helps in their (the merchants) adoption (of their services).

7.5 FinTech F

Speaking of their loan product, FinTech F describe the benefits of having the entire process digital and the speed of it as compared to applying for a loan at a bank:

"*can go to a bank and get a loan, but there is a lot of paperwork that they need to do, ours is completely digital. They can do everything through the app, and if you apply all your documents on the app, within a few hours we could potentially disburse you the loan, so that's the speed."*

They also describe their solution as being more simple than informal lending alternatives: "*I would say if somebody has availability to app, they would find it easier to get a loan and maybe more transparent process compared to an informal lending.*"

7.6 FinTech G

FinTech G state that their business model makes it "*a lot easier for the retailer to do much larger business*" and that "*he (the retailer) doesn't have to differentiate or keep different devices or different providers to really accept any form of payment.*".

7.7 FinTech H

FinTech H refer to the loans they provide as "*easy loans*" and argue that their model with the local partners that distributes and collects loans from retailers makes the process of getting a loan easier for the retailer as "*they both know each other for years, they both stay in the same town, and they both see each others face every day, so it's easy for them to transact.",* and also that by creating data about the retailers, it becomes "*much more easy for the companies to come onto the platform and provide them credit.".*

7.8 FinTech I

FinTech I explain how credit scores can be difficult to understand and they therefore have designed their credit score after the scale that is used in the school systems, namely "out of 100" so that it would be easier for their applicants to understand their credit scores: "*All the school marks, they are out of percentage, it's out of 100. So we kind of customize that. We don't want to complicate things there. So they now go: "Fine, I have 41 out of 100".".*

7.9 FinTech J

FinTech J emphasize the importance of making their soundwave-based payment solution as intuitive as possible:

"*with us the benefit is that we are not doing anything extra. So whatever the customer is doing right now, we are getting integrated inside that... So it's the same thing which the customer is doing in a more intuitive way... it's very intuitive, the transaction happens within seconds, under 3 seconds, you don't have to do anything. So we have use cases where you don't even have to launch the app; you unlock the phone, you go to the merchant device, just keep it in proximity to the device, and done, that is it, just unlock.".*

As a result of having such a intuitive solution, they further state that there is no additional financial literacy required for their customers to use their solution and that that is a key characteristic for being able to compete with cash as a payment mode:

"When you talk about literacy, you know, how we will literate the consumer, so, as K mentioned, this technology is interoperable. So, customers will be able to use it the way they are doing anything else right now. For example if I talk about dealing the banking number, they have been dealing a banking number, they don't have to do any extra step, you know, so they know how to confirm or just press "OK" on the phone, because they know how to use WhatsApp, so that is the thing, they don't have to do any extra thing. What they have been doing right now, we are being so interoperable that we are only getting integrated in their processes. So there is nothing extra which they have to do."

"*if our experience is better than a cash transaction, from the merchants point of view we are there, so even if he doesn't want to accept digital payments, if we are making his life easier he will opt for us as an optional mode of payment... you cannot remove cash from the economy if your solution is not as intuitive as paying by cash."*

8. Key Partnerships

8.1 FinTech A

When asked which partners are important for them to be able to improve financial inclusion, FinTech A describe how they need to partner with banks to be able to deal with card associations:

"Basically we - since the card association isn't dealing with a company like us, they do not recognize a company like us - we need a banking partner. Basically a settlement account to which the card association will credit all the proceeds... So we basically need a banking partner for the payment processing bit."

8.2 FinTech C

To be able to improve financial inclusion, FinTech C describe what they do as: "*What we are doing is very simple, we are helping people open bank accounts",* and do not surprisingly need to team up with banks to do so, although in a customer like fashion: "*the banks would actually be our customers"*.

8.3 FinTech D

FinTech D need to partner with banks and NBFC as they are not allowed to lend money themselves: *"If you are not a bank or a NBFC you can't really lend money to someone. So We have partnered with multiple NBFC as well as banks for this."*

8.4 FinTech E

FinTech E state that they do not partner with banks, but that this is not their own choice. Talking about their MFI and NGO partners who manages all contact with the financially excluded segment for them they say that:

"*they want to become a small finance bank or they want to apply for a banking license, which sort of becomes a challenge for us since we as an organisation are not permitted to lend to banks per se… We are allowed to support only non-profit organisations which have lending operations.*"

8.5 FinTech F

FinTech F describe how regulations make banks and NBFCs important partners for them to be able to improve financial inclusion:

"*We have lending partners. To provide a loan you need to be registered like an NBFC where we can put in our capital. So if we are not registered in NBFC yet, so we work with other NBFCs and banks so those become important partners for us in that sense.*"

8.6 FinTech G

FinTech G explain how they are "*what they call a business correspondent to India's largest bank, X",* which thus is an essential partner for the company.

8.7 FinTech H

To provide loans to their merchant customers, FinTech H explain that "*we tie up with NBFCs*" because:

"*they have an expertise in raising capital at 8-9% and then lending it at 15-16% or whatever, making money through that rotation. So we would rather partner with the NBFCs and the banks and to be the platform for lending.*"

8.8 FinTech I

FinTech I describe how they partner with several banks to gain access to funds as they are better at raising capital: *"they have what you will never have which is access to cheap capital. So you need to work with them. You have the tech, they have the capital, its a beautiful marriage"*

8.9 FinTech J

FinTech J explain how they partner with banks in order to provide their solution: "*We tie up with banks and enable digitisation, digital payments. So any kind of bank who has a core banking solution can take our SDK and enable all close proximity use cases.*"

9 .Cost structure

9.1 FinTech A

FinTech A emphasize how much cheaper their POS device is compared to alternatives:

"*the terminals that we kind of offer are low cost, normally an Ingenico or a Verifone terminal will cost somewhere around 150 Dollar, and ours would be like under 50 dollar… this works out much cheaper from them."*

When asked what would be a key resource for being able to do business with small merchants the answer given was: "*Our terminals, low cost terminals which lower the cost of everything.".* Thereto, FinTech A also state that the monthly service fee they charge for the POS devices is much lower than other alternatives:

"*It is way cheaper, because others, the banks normally, to a merchant like ours the bank will charge something like 600-700 Rupees a month and maybe even more. We would charge half the amount like 350 rupees a month.".*

FinTech A states that for them, a key focus is to keep acquisition costs down:

"*One key thing that you said, as you said is keep the cost of acquisition as low as possible, that is one key thing. As you go deeper into land, the cost of acquisition keeps increasing and that is the key challenge.*"

and that this is a significant challenge because:

"*The economics may not work out because, for example, in my service team, one engineer will deploy around six terminals on a daily basis, whereas in a small town, either because the number of sales we get there or because of logistical issues, as one terminal will be here and the other will be 50 kilometers away. Because of these reasons we cannot meet our productivity targets in small towns so that is the biggest challenge, I mean getting the services to those locations at the costs which kind of are viable is the most difficult."*

9.2 FinTech B

FinTech B feel that as they have a limited budget, the higher cost of marketing associated with the financially excluded segment makes them focus less on that segment:

"By its nature, India is still a very high-touch society. By high-touch I mean that unless you go to physically meet them, things don't happen... Therefore, there is a lot more marketing effort if we would want to go to those smaller retailers in a big big way. We would have to increase

our feet-on-street and all of that. Therefore you will see that in terms of percentages we're not focusing as much on that segment."

9.3 FinTech C

Not being allowed to actively market their product themselves, FinTech C state that being cost efficient is instead one of the main ways for them to get customers: "*if our solution is solving the problems straight away, is easy to integrate and cost effective, and the time to market is very quick, then we have done a good job, and they sign up with us."*.

Acquisition costs are not really a concern for FinTech C, as they are not allowed to market their product themselves and actively pursue new customers:

"It is something we would like to do but the regulator clearance has not come to us so it's still assisted mode now so what the regulator allowed is that okay they can use our app, but it has to be that you come to me and you tell me are you okay to open a bank account and then you go through that process."

9.4 FinTech D

FinTech D imply that by having lower overhead costs, they are able to lend money to smaller businesses than a bank would be able to do:

"most banks and NBFCs would not be located in this segment because of the cost of processing - first of all, you know, targeting a merchant like this, processing the loan - the entire overhead is - the cost is way more than you know, the actual money that you get out of it. So for small loans it doesn't make any sense."

FinTech D do not explicitly talk about the cost of acquiring customers. They do however imply that acquiring customers through other ways that digital marketing campaigns are too expensive for them:

"I think we're to small a company today to be able to do more of offline or TV campaigns, that's not something that we are yet. At a certain scale we would be able to do those, but today it's all digital primarily."

9.5 FinTech E

FinTech E state that "*And our aim is also to bring down the cost of capital for the end borrower, so that's kind an overview of the model."*. They further describe how being a cheap source of funds for their MFI partners is "*definitely a USP (unique selling point) for us as an organisation"* and that these low cost funds are enabled because: "*our own sources of funds are cheap, which in turn is how we are able to provide funds at a very reasonable rate."*.

FinTech E also describe how they are able to keep the cost of funds that are not sourced as donations, but rather as loans, and how their partner X who is one of the world's largest microlending networks provide them with cheap funds:

"So, we do not provide any interest on the loans to our lenders. We kind of proposition it as a creative way of giving because the same amount of rupees could have a multiplier effect. So it's not really an investment per se, it's just a different way of giving… X also lends us funds at 0% interest rate, so we repay just the principal amount to X, which is why our own sources of funds are cheap, which in turn is how we are able to provide funds at a very reasonable rate."

Similar to FinTech D, FinTech E do not either talk explicitly about the cost of acquiring customers but do imply that they would be high if they would not be working with their MFI and NGO partners:

"*our business model is such that we are heavily reliant on our partners because if we were to go out there and try to conduct these lending activities ourselves it would obviously be a very very big challenge for us."*

9.6 FinTech F

FinTech F state that one of their advantages over banks is their cost efficient operations and their scale economies:

*"*FinTech F*: Banks need to have a physical verification and somebody needs to fill the form then look through all of it so I believe being a completely digital process cuts down our costs significantly. The cost of processing a loan for us vs a bank, our would be much lower.*

Interviewer*: So it's scale economies?*

FinTech F*: Yes, correct."*

FinTech F do not either mention acquisition costs but do state that the resources needed for establishing the necessary physical presence in the lower income segments hinders them from entering those segments, thus implying that this physical presence is associated with high acquisition costs: "*I don't think that we are really targeting that segment yet because that requires some physical presence on ground.".*

9.7 FinTech G

FinTech G describe how they have a focus on costs:

"*What we're trying to do is create efficiencies within our systems so that we can pass most of the benefit of low cost operations and running etc. to the entrepreneur who, you know, is helping us extend the reach and provide those services.".*

To be able to have cost efficient operations, FinTech G also believe that scale economies plays an important part and that: *"key activities still remains in a way that we, as much as we possibly can on the business processes, cut down the costs so that we can go deeper and wider.*"

FinTech G explain that they have focused their mobile wallet in "*a few areas where we believe - where we don't have to spend to acquire customers, to spend to engage the customers".*

9.8 FinTech H

FinTech H do not explicitly talk about being cost driven, but they do talk about how the data that they create on their platform enables their lending partners to lower their NPAs (non-performing assets), which thereby enables them to give loans to FinTech H's customers:

"*Today, because the data is not available and because the NPAs are so high, people are not really risking the particular money. If you look at it in the pyramid, most of the credit is actually going to the first level of the pyramid. The bottom and the middle of the pyramid is not getting access to credit very easily. So that digital footprint or digital data that they can generate will actually help them to secure credit, and more and more they do digital payments, the more and more they digitally transact and they create a trace, and it's much more easy for the companies to come onto the platform and provide them credit."*

FinTech H also talk about how reaching these new customer is one of the main obstacles, and thereby imply that the costs are higher to reach India 2 and 3 rather than India 1.

"I think the biggest challenge is market access, right. You now, selling products in a big city like Bangalore is relatively easy, people are more digitally savvy… I have seen TV ads which I understand, I have been approached by, like a marketing person at a petrol pump or in a mall offering me a credit card.. So there are many ways in which I have awareness and the ability to take these products, but the moment you go to smaller towns, their friend circle and peer group does not have these products, they don't have marketing channels which reach them properly.. I think that one of the challenges for Fintech companies is that it's very hard to have market access with just technology. If you see the use cases of which India 2 uses technology are very limited… So India 1 is what you might call the "self-help economy". You come to

Starbucks, you pay your own bill, you go there and take your table - that's self-help. We help ourselves. Most of India is not like that. An India 2 guy will not take the table, he will hesitate."

9.9 FinTech I

When asked how they compete with competitors, FinTech I explain how their relatively low operational costs enable them to provide much cheaper loans:

"*So our operation cost is very lean. We give a loan at 26-27% as compared to a money lender who is giving at 60% so we are giving a loan at almost 50%, half the rate of what my lender is charging, so not only do we keep, we are giving a loan from a formal institution so if somebody takes a loan from us, they become a part of the formal economy.*

FinTech I acknowledge the issue of acquisition costs as well:

"*you have to control your cost of acquisition… Some of the cost of acquisitions you see in this business or some of the Fintechs, and I've done some research, goes up as high as 300 dollars per customer, 200 dollars per customer. It is ridiculous, you can never make money, its just blowing up investors money."*

They go on and say that they are good at managing their cost of acquisition, largely as a result of acquiring a large part of their customers using their offline method:

"in my offline channel, my cost of acquisition is approximately 3 dollars, as compared to 50 dollars on the digital market. Total combined, my cost of acquisition is down to about 21 dollars. So that's how we work here."

9.10 FinTech J

FinTech J believe that their cost effectiveness will be an important element in helping them overcome the preference for cash payments:

"*because of the behaviour and our cost effectiveness we believe that the merchant is going to see more value. So unless this transaction is better than the cash transaction in terms of value, money and experience, that jump he will never take.",*

They further describe their product as being "*very cheap. In comparison with an EDC machine it is not even 1/10.".*

When talking about the financially excluded segment, FinTech J state that:

“nothing can convince them, no amount of marketing, no communication, nothing can convince them unless they actually use it and that they see that they are not losing money, that it’s fine and absolutely OK.”

thus implying that the costs for acquiring such customers could be very high.