The Myth of Financial Inclusion through FinTech: Focusing on the Digital Credit Industry in Kenya

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List of Abbreviations

AB   Amount of Borrowing

CAK   Communications Authority of Kenya

CBK   Central Bank of Kenya

CBKB   Central Bank of Kenya Amendment Bill

CGAP   Consultative Group to Assist the Poor

CRB   Credit Reference Bureaus

FB   Frequency of Borrowing

FHS   FinAccess Household Survey

FSD Kenya   Financial Sector Deepening Kenya

FTL   FinTech Loan

HIC   High Income Country

ICT   Information Communication and Technology

KII   Key Informant Interviews

KNBS   Kenya National Bureau of Statistics

Ksh   Kenyan Shillings

MB   Borrowing from Multiple sources

MBL   Mobile Banking Loan

MSE   Micro Small Enterprises

MFI   Microfinance Institution

MNO   Mobile Network Operator

PEA   Political economy analysis

SACCO   Savings and Credit Cooperative Organizations

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Access Condition and Agreement

Abstract

Digital credit, a type of mobile loan service, has achieved remarkable success in Kenya. The advocates of digital credit argue that its unique characteristics are expected to give new opportunities to those who have been excluded from formal loan services due to their vulnerable socio-economic status. However, it has been questioned whether digital credit has had a positive impact on Kenyan households in terms of expanding financial inclusion. This thesis draws on insights from two different types of digital credit services, mobile banking loans (MBL) and Fin-Tech loans (FTL), which yield different results. Both digital credit services are indiscriminately provided to rural residents. Yet, the access to MBL is more influenced by the socio-economic characteristics of the borrowers than that of FTL. Female and low-income groups are less likely to use MBL, in contrast, the use of FTL is less affected by the variables of sex and the level of income, meaning that people who are female or of low-income could access FTL just as male and high-income classes could. However, it should be noted that easy access to loans is not always a good sign. FTL services could make the borrowers use excessive borrowing, leading to late-repayment or even default. In reality, it has been reported that a large number of digital credit borrowers in Kenya have been struggling with various problems, especially with high levels of default. Therefore, this thesis uses mixed methods combining OLS regression analysis and semi-structured interviews with digital credit borrowers in Nairobi's slum areas, exploring the main drivers of high default rates on digital credit. According to the quantitative results, the use of digital credit itself influences default more than other factors such as consumers' income level. It demonstrates that the use of digital credit itself has a greater effect on the likelihood of default than borrowers' characteristics. Also, the study qualitatively identifies the characteristics of digital credit, such as high interest rates, short repayment periods, and the inducement of over-borrowing, which have made it harder for borrowers to repay the loans. In addition to high default rates, this thesis sought to identify the consumer protection

issues currently facing Kenyan borrowers. Through key informant interviews (KIIs) with officials of MBLs and semi-structured interviews with consumers of digital credit, I conclude that the Kenyan digital credit environment is rife with consumer protection risks. Customers have been harmed by the problems of digital credit products; the characteristics of digital credit, such as high interest rates, aggressive business practices that encourage consumers to borrow continuously, and the existence of unlicensed lenders, may increase risks. There are instances of improper debt collection by digital credit lenders following default. In addition, the interviews reveal that there are problems with transparency because of violations of data privacy and deceptive marketing. To address these concerns regarding consumer protection, the Central Bank of Kenya Amendment Bill 2021 was introduced in December 2021. This is significant as it is the first serious attempt to regulate the digital credit market. However, based on the findings of this study, it appears that the new bill has limitations when it comes to addressing various consumer protection risks which I identify through the interviews. Moreover, certain provisions of the bill may endanger both borrowers and lenders. In conclusion, this thesis empirically explores the impact of digital credit on Kenyan households from multiple perspectives by listening to various stakeholders, digital credit borrowers and lenders, and by constructing a picture of the entire digital credit business using a mixed methods approach, and thus contributes to filling the knowledge gap. The results disprove the myth of digital credit's benefits and demonstrate the need for improved regulation and additional research.

1. Introduction

1.1 Financial exclusion in the world

Most people's lives are closely related to financial services. Financial services help households and companies plan for everything from long-term objectives to unexpected emergencies, making daily living easier. However, many people in low- and middle-income countries (LMICs) have continued to lack access to the most basic financial services, resulting in restrictions to household economic growth. According to the World Bank Group[1], around 1.7 billion people worldwide did not have a basic bank account in 2017. Access to financial services is more limited in poor nations compared to wealthy countries. Figure 1 shows the population without banking financial services by region compared to the total regional population. In the Middle East, more than 47 percent of people still do not have a bank account, and even in sub-Saharan African countries, around 45 percent do not have access to a bank account. Additionally, in South Asia, more than 32 percent of the population is beyond the reach of banking services. In contrast, less than 3 percent of the population of OECD countries, so-called high-income countries (HICs), do not have access to banking services[2]. As seen in figure 1, most of the population without financial services is concentrated in LMICs. According to the study by Connolly (2012), approximately 70 percent of the financially excluded population is in LMICs.

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[1] https://www.worldbank.org/en/topic/financialinclusion/overview
[2] https://www.worldbank.org/en/publication/globalfindex/Data#sec3

Figure 1. Percentage of adults financially excluded (without a bank account) by region
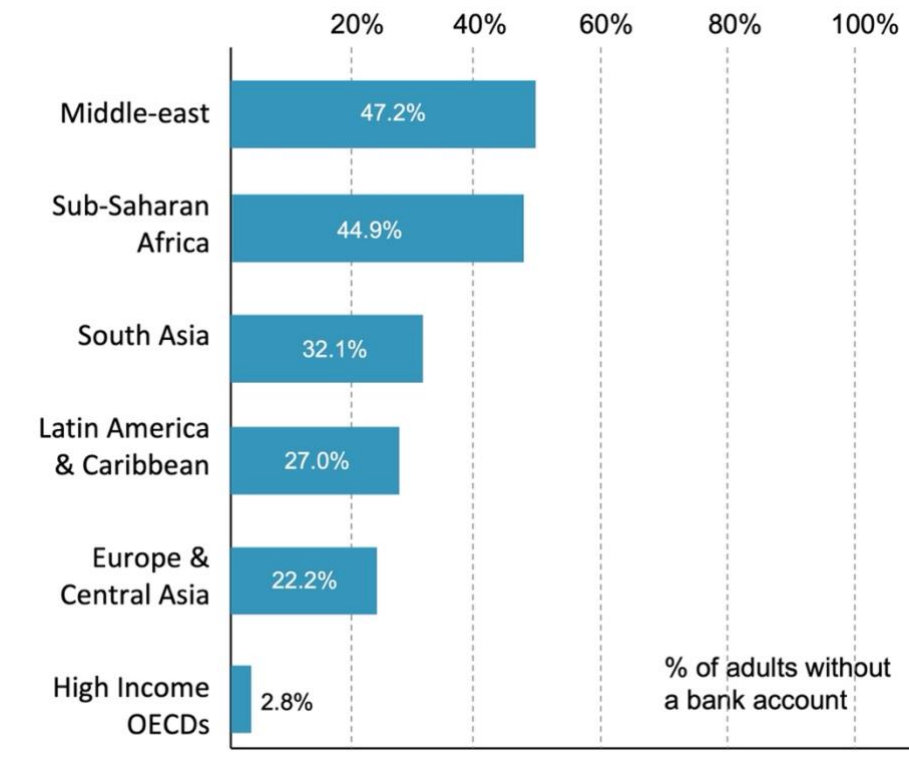
Source: The World Bank (2021)

The critical reason why people in LMICs have been excluded from financial services is that a large number of people are poor, which causes the problem of "information asymmetry". It occurs between lenders and borrowers when the information between them is unequal (Lean and Tucker, 2001). Information asymmetry means that one party has more or better information than the other, making financial markets inefficient, since all market participants have some difficulties in making financial decisions under circumstances where financial information required for decision making is not equally distributed. Adverse selection and moral hazard are examples of the consequences of information asymmetry and are severe in LMICs. Generally, financial service providers try to collect prospective borrowers' financial information such as income status and assets, and claim collateral just in case they fail to repay a loan. However, the potential borrowers in LMICs usually classified as low-income often lack track records, credit history, or collateral to satisfy lenders'

concerns and requirements (Hannig and Jansen, 2010). The lack of official records concerning credit history, in particular, is a significant barrier for banks when offering loan services to those who have never utilised financial services (Mahmood, 2013). Therefore, lenders in LMICs have no choice but to take a risk when giving a loan to the poor, eventually resulting in increasing interest rates. Furthermore, formal financial institutions tend to avoid offering loans to poor customers due to asymmetric information, since they have to take risks and even sometimes cannot provide appropriate interest rates based on the specific risks posed by clients, because the government controls the interest rates which the banks can charge[3]. Several articles assert that information asymmetry in financial services is an obstacle to financial inclusion in LMICs (Aduda and Kalunda, 2012; Kumar and Park, 2012).

Transaction costs are also one of the reasons why individuals, particularly the rural poor in LMICs, have been excluded from financial services (Agyekum et al., 2016). The rural poor frequently live in areas where there is poor transportation and communication infrastructure, making it particularly difficult and expensive for both financial service providers and the poor themselves to reach each other (Dong and Xu, 2012). Also, it is difficult for financial service providers to obtain information about potential clients living in that area due to transaction costs. Lenders must spend time obtaining information in order to determine if a potential borrower has the ability to repay the loan, which increases transaction costs. Therefore, providing loans to the rural poor consumes higher transaction costs when operating loan services, but the quantity and size of loans are too little to create profits (Armendáriz and Morduch, 2005: 1-24). Because each transaction has an administrative cost, it is more difficult for those offering the services to earn a

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[3] In Kenya, the commercial banks have also been controlled by the Central Bank of Kenya in terms of interest rates, so they could not set the interest rate according to each client's risk. The below link shows the forementioned content in more detail:
https://www.businessdailyafrica.com/bd/economy/cbk-lifts-freeze-on-loan-prices-after-imf-notice-
3741594#:~:text=The%20lending%20rates%20averaged%2012.38,CBR)%20then%20at%208.5%20percent.

profit on such minor transactions. Therefore, it appears to be reasonable that conventional financial institutions decide not to conduct business with the rural poor.

Another cause of inequity in financial inclusion is a lack of financial infrastructure in many LMICs, which limits access to financial service locations. Improving financial infrastructures is critical for financial inclusion (Sarma and Pais, 2011), as it boosts financial institutions' capacity to access points where they can do financial transactions with prospective clients. However, many people in LMICs, particularly those in rural regions, face more challenges in accessing financial services due to a lack of financial infrastructure such as bank branches, automated teller machines (ATMs), and point-of-sale (POS) setups (Ozili, 2022). The poor financial infrastructure in many LMICs places significant limits on formal financial institutions' ability to reach underserved populations at the bottom of the socio-economic pyramid (Zulkhibri, 2016).

1.2 **Alternative channels of finance: Microfinance**

In a situation where many individuals in LMICs have been excluded from formal financial services, several alternatives have emerged instead of formal financial institutions. Microcredit, a small loan provided to the vulnerable populations, has a long history and includes various institutional formats, ranging from individual money-lenders to formal institutions such as credit unions, financial cooperatives, and specialized SME funds (Bateman and Chang, 2012). These initiatives emerged from a desire to transform the lives of the poor and working classes, particularly in England from the 18th and 19th century onwards (Birchall, 1997).

Microfinance, in the form we know today, and the foundation of a powerful 'microfinance movement', were started by Muhammad Yunus, the founder of Grameen Bank, in Bangladesh. Microfinance was a name coined for the kinds of

collateral-free tiny loans for income-generating activities of the poor (Yunus, 1997; Yunus, 2004). Microfinance originated as a movement to ensure that financial services like credit, savings, and insurance are available to individuals who do not have access to formal financial services (Mersland and Strøm, 2010; Yunus, 2004). Its primary goal was to eliminate poverty and empower women while also allowing individuals to become self-sufficient (Yunus, 1997). The international donor communities like World Bank were interested in what Yunus was saying, and so agreed to support the modern form of microfinance for promoting self-help and individual entrepreneurship (Bateman and Chang, 2012).

Since the 1980s, microfinance has been widely promoted as a solution to poverty and under-development by supporting informal microenterprises and self-employment. By the 1990s, microfinance had become the most generously funded poverty reduction policy, and there was an expectation that an unprecedented episode of poverty reduction and bottom-up economic and social development was underway. Microfinance has expanded rapidly since the 1990s. The Microcredit Summit Campaign's 2015 State of the Summit Report demonstrates microfinance's significant success in supporting the disadvantaged on a worldwide scale[4]. According to figure 2, in 1997, over 13 million individuals had access to microcredit worldwide. By 2000, the customer population had doubled to around 26 million, and by 2006, it had increased by a factor of ten to over 130 million. More than 211 million individuals worldwide have access to microfinance as of 2013 (Reed, 2010).

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[4] https://www.findevgateway.org/paper/2015/12/mapping-pathways-out-poverty-state-microcredit-summit-campaign-report-2015#:~:text=The%20State%20of%20the%20Campaign,themselves%20out%20of%20extreme%20poverty.

Figure 2. The number of worldwide microfinance borrowers
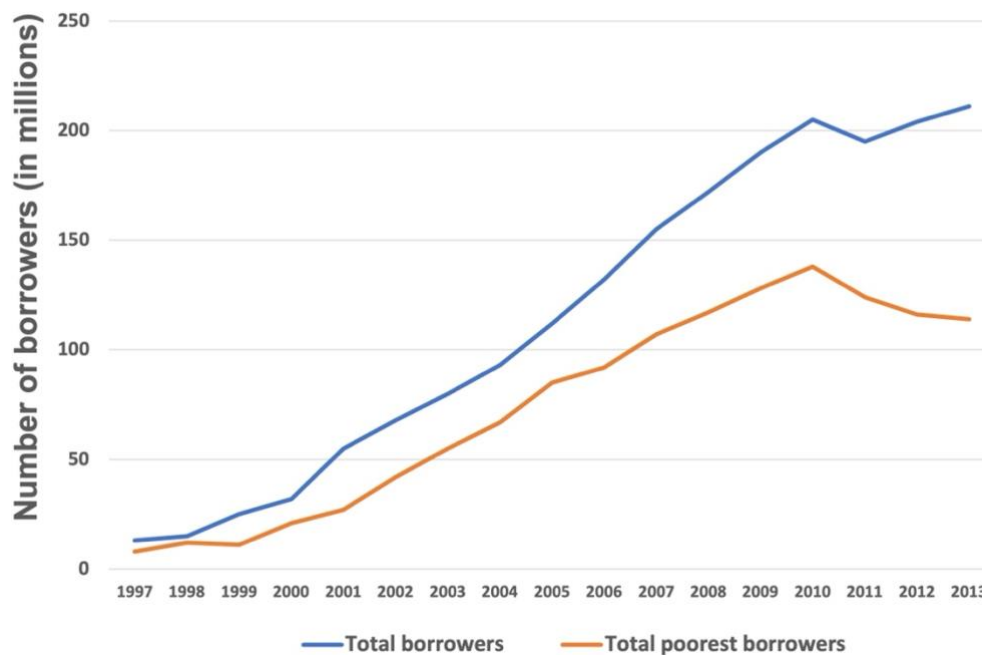
Source: Reed et al. (2015)

Microfinance became a buzzword in the financial markets as an effective instrument for reducing poverty and fostering socio-economic growth, thus empirical research has been conducted over the last couple of decades to analyse the impact of microfinance on the underprivileged. With a cross-sectional survey of 780 microfinance clients in Malaysia, Samer et al. (2015) demonstrate that the use of microfinance has a beneficial effect on the household income of women borrowers who have participated in microfinance programmes for at least three years, as compared to women who have not received treatment. Furthermore, in addition to an impact on households, microfinance was expected to have positive impacts on micro small enterprises (MSEs). The paper by Olowe et al. (2013) found that the financial services received from microfinance have a considerable and favourable effect on the expansion of MSEs in Nigeria. Other than those studies, various papers confirmed the positive impact of the use of microfinance on the growth of MSEs and on increasing incomes of households in LMICs (Cooper, 2012; Rahman and Ahmad, 2010).

While the microfinance industry has made some progress in achieving financial inclusion in LMICs (Reed et al., 2015), it has faced criticism regarding its impact on poverty reduction. Several studies (Barnerjee et al., 2009; Karlan and Zinman, 2009) conducted using supposedly more accurate Randomised Control Trial (RCT) methods have found little to no impact from individual microfinance programs. According to Bédécarrats et al. (2020), previous research that explores the positive impacts of microfinance has limitations in both methodology and logic, and therefore may not be sufficient to prove the positive role of microfinance. Microfinance has served as an alternate avenue to formal or traditional financing, but it has not resulted in dramatic change in LMICs in terms of alleviating poverty or empowering women (Awaworyi, 2014; Bateman, 2010; Duvendack and Mader, 2020; Rooyen et al., 2012; Stewart et al., 2010). Banerjee et al. (2015) insist that microfinance often has a mildly favourable influence but does not have transformational impacts (see also Duvendack and Mader, 2020). Even proponents of microfinance such as Banerjee and Duflo (2013) found no evidence of positive development outcomes, including women's empowerment, education, and health, through their randomized evaluation in India. Additionally, according to their research, it was difficult to observe a significant increase in the number of new businesses started or changes in profits of existing small and medium enterprises that have received microcredit services. Attanasio et al.'s (2015) research in Mongolia suggests that access to group loans has enabled women to start new microbusinesses, but it has also led to an increase of over a third in their working hours. The negative impacts seem to be more pronounced among less-educated women.

Even worse, some research (Coleman, 2006; Hulme and Mosley, 1996; Kondo et al., 2008) asserts that microfinance has a negative or inconsequential effect on poorer families, but a favourable and growing effect on wealthier households. Coleman (2006) investigated microfinance in Thailand and concluded that it had a favourable influence on the wealthier section of the membership, but a negligible impact among those with lower incomes. Hulme and Mosley (1996), utilising data from

Indonesia, India, Bangladesh, and Sri Lanka, discovered a favourable influence of microfinance on average income, but, like Coleman (2006), discovered a bigger benefit for more prosperous members.

Going further, microfinance institutions (MFIs) have been criticised for their mission drift from being altruism-centred to commercialised-centred (Mersland and Strøm, 2010). The commercialised movement, according to some in favour of commercialisation, is essential to fund the continuous development of MFIs. The proponents of commercialization (Otero and Rhyne, 1994; Robinson, 2001) assert that the commercialized-model of microfinance are more likely to increase in the supply of microfinance services, and they saw this as an opportunity to generate substantial benefits for impoverished communities. However, there is the assertion that MFIs should remain untouched as it is the best possible approach to reach and serve the poor (Cull et al., 2009). In fact, the transformation of MFIs into capital-based organisations has had certain detrimental consequences for the poor, i.e., banks would not provide loans to the poor, since providing loans to them would increase transaction costs as discussed earlier, and collecting customer information from borrowers who have not used formal financial services tends to be difficult. Also, banks would not be able to set appropriate interest rates based on the customers' risks. However, since MFIs are mainly based in a particular region, it is easier for MFIs to obtain customer information from borrowers than it is for banks to do so, which can offset side effects from information asymmetries. Also, the most important point here is that, as microfinance became commercialised, it was able to offset the growing transaction costs by providing loans to the poor at higher interest rates, unlike banks. According to Olivares-Polanco (2005), MFIs that have been commercialised have limited their client bases, and focused mostly on metropolitan regions at the expense of rural communities. Furthermore, in the drive of commercialisation, shareholders and senior management have grown extremely affluent, while the poor have been over-indebted as a result of excessive interest rates (Cull et al., 2009).

The most significant issue with microfinance has been over-indebtedness. While advocates of microfinance have argued that microfinance does not lead borrowers into a cycle of debt, this claim has been contradicted by Bédécarrats et al. (2020). The advocates have presented the evidence that microfinance has not largely contributed to high-level of indebtedness, however, Bédécarrats et al. (2020) indicate that the work by microfinance proponents failed to estimate the exact debt amount by households and often underestimate the debt amount. In practice, the microfinance crisis of 2010 in Andhra Pradesh in India, where thousands were over-indebted with serious implications for people's livelihoods and communities, also increased the concerns about microfinance (Rooyen et al., 2012). The research prompted by over-indebtedness crises has been conducted in several countries. Krishnaswamy and Ponce (2010) found that microfinance borrowers in Karnataka in India were also struggling with repayment, and poor borrowers were falling further into poverty (Guerin et al., 2011). In Bosnia and Herzegovina microfinance borrowers were becoming over-indebted and defaulting (Pytkowska and Spannuth, 2011). Another study by Prathap and Khaitan (2016), with a year-long financial diaries survey of 400 active borrowers in rural southern India, discovered that approximately 21 percent of the households in the sample had high levels of over-indebtedness, financial distress, and debt dependence, primarily because MFIs had delivered their services to the poor who could not afford to repay what they borrowed. The evidence shows that the economic crisis of using microfinance was not a region-specific problem, but a general problem in LMICs where microfinance industries have been actively grown.

In spite of growing concern on the impacts of microfinance on over-indebtedness, financial inclusion advocates (Burgess and Pande, 2005; Suri and Jack, 2016) still assert that increased access to financial services can give more economic opportunities to the poor, leading to poverty reduction and improved welfare. This argument is closely related to thought of neoliberalism and globalisation (Bateman and Chang, 2013). According to Bateman and Chang (2013), neoliberals viewed microfinance as a visible means of appearing to solve the problem of poverty, but

they did not exert enough effort to create a successful microenterprise after being funded by microfinance. By convincing the vulnerable populations that using microfinance may help reduce poverty, the elite group have taken advantage of the most vulnerable groups by charging high interest rates. Therefore, despite the lack of promising results from microfinance, financial inclusion is still promoted to maintain the stance of neoliberalism and globalization, and various scholars still insist increasing access to finance would bring about positive impacts (Burgess and Pande, 2005; Sinclair et al., 2009; Suri and Jack, 2016).

FinTech is also on the same line. After the boom of microfinance and failure on the impacts on poverty reduction, neoliberals selected FinTech as another tool for promoting financial inclusion and economic development in LMICs (Tyce, 2020). They view FinTech as a significant improvement over the traditional "bricks and mortar" microcredit model, as it enables financial transactions to be simpler, faster, and less expensive for the world's poor to obtain as much microcredit as they need. Along with these arguments, the proponents of financial inclusion frequently vocal about how technological advancements could lead to more people having access to credit and generate more profits (Hoder et al., 2016).

 Therefore, the expansion of financial inclusion using information and communication technology (ICT) has gained attention. Regarding the possibilities of financial inclusion through ICT, the remainder of chapter 1 is structured as follows: I explore the rise of digital credit, which is a new type of loan services provided through mobile phones in the next section 1.2. Going further, I discuss the digital credit environment in Kenya in section 1.3, and also the downsides of digital credit in the following section 1.4. Then, I address the motivation of this study and the research questions, and briefly explain the methodology for this thesis.

1.3 The rise of digital credit

As debate on microfinance has continued, many experts are turning to a broader notion, "financial inclusion", which brings microfinance together with efforts to provide savings, insurance, and payment services to underserved communities (Cull and Morduch, 2017). Financial inclusion, which refers to the provision of financial services at affordable cost to the disadvantaged and low-income segments of society, is considered to be one of the major enablers of economic development (Demirguc-Kunt and Klapper, 2012).

With the emergence of the notion of financial inclusion, ICT has gained attention as a way of facilitating financial inclusion. ICT is expected to contribute to economic growth (Kpodar and Andrianaivo, 2011), because ICT positively influences development by providing access to information, equalising opportunities in rural areas, and contributing to pro-poor market developments (Cecchini and Scott, 2003). Above all, mobile devices have recently been considered as one of the most effective development-prompting ICT tools (Kpodar and Andrianaivo, 2011). The most unique and powerful characteristic of mobile devices is their mobility, since they give their owners the ability to utilise various application-based services regardless of their locations, even while traveling (Sarker and Wells, 2003). Mobile devices enable people to overcome geographical barriers and connect individuals to individuals, information, and services with ease. People do not need to spend their money and time on reaching service points, saving on communication and transportation costs by conducting a financial transaction through mobile devices without visiting conventional banks.

The World Bank puts emphasis on the importance of mobile devices for financial inclusion through its Universal Financial Access by 2020 initiative[5]. As the use of mobile devices for financial inclusion has become popular, the term "digital financial inclusion" has become more commonly used. Digital financial inclusion

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[5] https://www.worldbank.org/en/topic/financialinclusion/brief/achieving-universal-financial-access-by-2020#:~:text=The%20UFA2020%20initiative%20envisions%20that,to%20manage%20their%20financial%20lives.

means the use and promotion of digital financial services to advance financial inclusion (AFI, 2016). Therefore, banks and other financial institutions have begun to offer digital financial services for financially underserved populations, building on approaches used for years to improve access channels for those already served by banks and other financial institutions.

In LMICs, digital financial services are mostly operated through mobile devices. With the help of mobile devices, digital financial services are expanding rapidly in many LMICs and are expected to grow more. According to a report by McKinsey and Company (Manyika et al., 2016), digital finance is expected to offer access to 1.6 billion unbanked individuals in LMICs by 2025, with more than half of them being women. Sustainable lending of an extra US$ 2.1 trillion to consumers and small enterprises through digital financial services is possible. Also, the providers of financial services are expected to save US$ 400 billion annually in direct transactional expenditures by switching from traditional to digital accounts. By increasing their client base, providers boost their income potential and might increase their balance sheets by up to US$ 4.2 trillion in a sustainable way. Innovative digital financial services, including the use of mobile phones, have been provided in more than 80 countries across the world (Pénicaud and Katakam, 2014).

Kenya is one of the leading countries where digital financial services has been prospered (Jack and Suri, 2011). M-Pesa started to offer three key services: withdrawing money from the agent network, transferring money and buying Safaricom airtime credit (Hughes and Lonie, 2007). As seen in figure 3, within three years, M-Pesa had acquired about 10 million customers. As of 2017, the number of M-Pesa customers has reached 27 million, supported by more than 130,000 agents spread across the whole country (Lashitew et al., 2019). After the great success of M-Pesa in Kenya, the mobile money industry in that country has grown to a level that 35

million customers are using mobile money services in 2021, which is around 63 percent of the Kenyan population[6].

Figure 3. Growth of users and agents of M-Pesa in Kenya
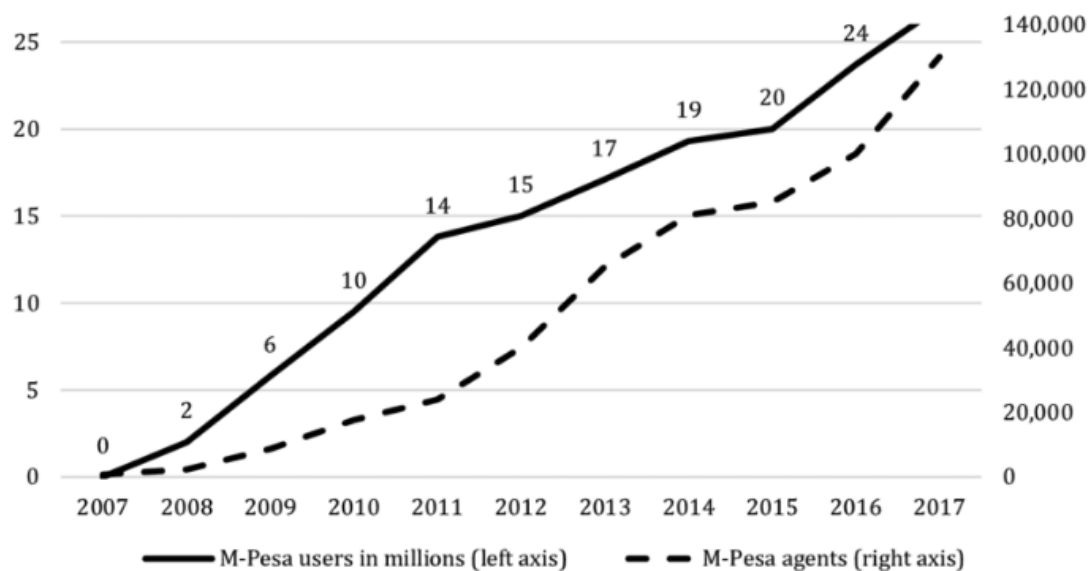
Digital finance provides various kinds of financial products from basic transactions to insurance. Digital payment and transfer services have been widely used for development purposes. For example, overseas workers from LMICs have widely used digital transfer services to send money to their families, known as mobile remittances (Merritt, 2011). Digital transfer services have much simpler and more affordable registration processes, and offer faster and easier transactions compared to formal transfer services (Kim et al, 2018). Also, digital payments have been used for various aims, including education, water sanitation, and farming (Braniff, 2016; Mattern and Ramierez, 2017; Waldron et al., 2019). Digital payment contributes to reducing the costs of collecting bills from the poor and expanding the outreach of services. For example, digital payment of water bills reduced the cost of fee collection by 57 — 95 percent across Africa through savings in staff implementation

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[6] https://africa.businessinsider.com/local/markets/kenyas-mobile-money-transactions-surge-by-63-in-2021-report/tmkw1rn#:~:text=According%20to%20the%20Kenya%20National,32%20million%20to%2035%20million.

time and reduction of vendor commissions (Waldron et al, 2019). Digital financial services also give more opportunity for rural farmers to reach more distant value chains to which they had previously not accessed, through digital payment systems, possibly increasing their revenue (Mattern and Ramierez, 2017).

Following the successful implementation and settlement of digital transfer and payment systems, an increasing trend in LMICs is digital credit—providing rapid, modest loans remotely via digital channels. The renowned success of Safaricom's digital credit and savings programme, M-Shwari, which launched in Kenya in late 2012, is the most prominent example. Over six million Kenyans have obtained credit through M-Shwari after five years, and roughly 27 percent of Kenyan citizens have utilised at least one digital credit service (Kaffenberger et al., 2018). In recent years, several types of digital credit have emerged and shown promise for broadening financial inclusion toward credit by removing some of the obstacles of access to finance (Carstens, 2019; Patwardhan, 2018, pp. 57-89).

The advocates of digital credit believed that digital credit would be a game changer in place of traditional financial services such as those supplied by banks and microfinance institutions[7]. Digital credit differs from traditional bank or microfinance loans in four ways: 1) transaction and operational expenses are reduced; 2) loan eligibility and approval decisions are rapid; 3) it benefits from enhanced credit scoring and greater product customisation; and 4) it is simple to use (Chen and Mazer, 2016). Those characteristics enable digital credit suppliers to overcome the risks associated with information asymmetry and high transaction costs, which traditional financial institutions such as banks have been struggling with.

For starters, digital credit allows consumers to save money on transaction fees that would otherwise be charged when utilising traditional lending services. Every digital credit transaction, such as loan applications, withdrawals, and repayments,

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[7] https://outlookmoney.com/fintech/digital-lending-a-game-changer-for-small-value-business-loans-8186-8186

may be managed remotely using mobile applications and text messaging, rather than having to make a trip to a bank branch, ATM, or other financial service point (Chen and Mazer, 2016). It may lower the additional expenditures incurred by borrowers during their visits to financial service providers. According to research conducted in Kenya, digital financial services significantly lowered transaction costs in informal markets (Jack and Suri, 2014). Suppliers can also cut operational expenses because they do not need to build physical company sites such as branches or ATMs to operate their business. It eventually could lower unit costs of services.

Another distinguishing feature of digital credit is that the transaction process of digital credit occurs instantaneously (Chen and Mazer, 2016). Conventional loans often take many days to process, but digital credit needs only one day at most. Each transaction necessitates a number of considerations, including loan eligibility, credit limitations, client management, and collection. Because most conventional loan choices are dependent on human judgment and manual processes, such decision-making processes typically take time. In contrast, the decision-making processes for digital credit occur in seconds or at most 24 hours, from the completion of the application form to the decision to give credit. Automatic systems, such as computer algorithms, permit a quick procedure (CGAP, 2019; Hwang and Tellez, 2016). When individuals are in distress due to numerous emergency scenarios such as disaster, accident, or sickness, the poor may struggle to find the funds to deal with those issues. In this case, the impoverished can benefit from digital credit services more quickly than from traditional lending services (Suri et al., 2021).

Furthermore, borrowers may easily access digital credit services. In case of M-Shwari, borrowers just need to be an M-Pesa subscriber for 6 months and have an M-Shwari account to qualify[8]. As soon as a customer has made an M-Shwari account, he or she can apply for a loan service – although they have had no previous history of formal banking services (Cook and McKay, 2015). This

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[8] https://www.safaricom.co.ke/personal/m-pesa/credit-and-savings/m-shwari

streamlined and straightforward procedure may lessen the entry barriers into digital credit services for individuals with low levels of education.

Thanks to these appealing features of digital credit, the number of users of digital credit has grown steadily since 2012. As a result, in addition to mobile network operators (MNOs) and bank collaborative supply models, an increasing number of private enterprises and FinTech firms, providing financial services enabled by computer programmes or other technologies, are joining the digital credit market (MicroSave Consulting, 2019). The majority of early digital credit services featured collaborations between MNOs and formal financial institutions such as banks, and now new forms of collaboration models including third-party FinTech businesses are developing (Hwang and Tellez, 2016). As digital credit markets become increasingly diversified, various features of the market have emerged. Therefore, I will look deeper into this with Kenya's case.

1.4 The digital credit environment in Kenya

Kenya is regarded as a leading country where the digital financial industry has been flourishing. M-Pesa was the first mobile money service in Kenya, and it became Africa's most successful mobile money service. As mentioned in section 1.2, the number of M-Pesa customers reached 30 million in 2022[9]. Some papers (Mwega, 2014; Heyer and Mas, 2011) suggest that the loosening of the financial regulatory system in Kenya was a factor in the success of M-Pesa. The Kenyan government adopted an open and supportive stance, hoping that new financial products, such as M-Pesa, would not be overly constrained by rules and regulations. The supporters of M-Pesa argue that this government stance has facilitated innovation and contributed to the explosive increase in the use of mobile money.

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[9] https://www.theeastafrican.co.ke/tea/business/safaricom-m-pesa-crosses-30-million-active-users-in-kenya-3743258

However, there is an opposite argument that the success of M-Pesa cannot be solely attributed to regulatory support, but also to its market dominance facilitated by its providers (Tyce, 2020; Bateman, 2018). Tyce (2020) argue that Safaricom, the provider of M-Pesa, has been able to establish a monopoly in mobile money industry in Kenya by using its political networks to fend off rivals and gain market share. The shares of M-Pesa have become distributed especially for the elites who seem to enjoy their profits, so Safaricom was able to keep their dominance by the political power. Accordingly, Safaricom has held the top spot in the Kenyan mobile money market by maintaining a commercial and strategic mindset while also using these political networks to influence regulations and market influence. According to the Communications Authority of Kenya's quarterly Sector Statistics Report, M-Pesa had a 98.8% market share of mobile money subscriptions for the three months that ended 31 March 2020, whereas Airtel Money and T-Kash had insignificant market shares of 1.1% and 0.05%, respectively[10]. This demonstrates the dominant position of M-Pesa in the Kenyan mobile money market, which has been sustained by a combination of commercial strategy and political influence.

After the success of mobile money, the digital financial service provider, Vodafone and Safaricom, started to distribute loan services through mobile devices in order to maximize their profits from the loan industry. After M-Shwari, the first digital credit service in Kenya, was launched in 2012, the number of customers using digital credit has grown unlike other digital financial services. According to the report by FSD Kenya (Totolo, 2018), about 35 percent of Kenyan phone owners had used digital credit services at least once by 2017, as described in figure 4. When considering the fact that mobile phone penetration among adults was 98% in Kenya (Kharono et al., 2022), the fact that 35 percent of the population with phones have used digital credit within five years after the first launch shows that digital credit has gained popularity by many people in a short period of time.

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[10] https://www.connectingafrica.com/author.asp?section_id=761&doc_id=762180

Figure 4. Use of digital credit by Kenyan phone owners

19%

16%

65%

■ Currently borrowing digital credit

■ Used digital credit in the past

■ Never used digital credit
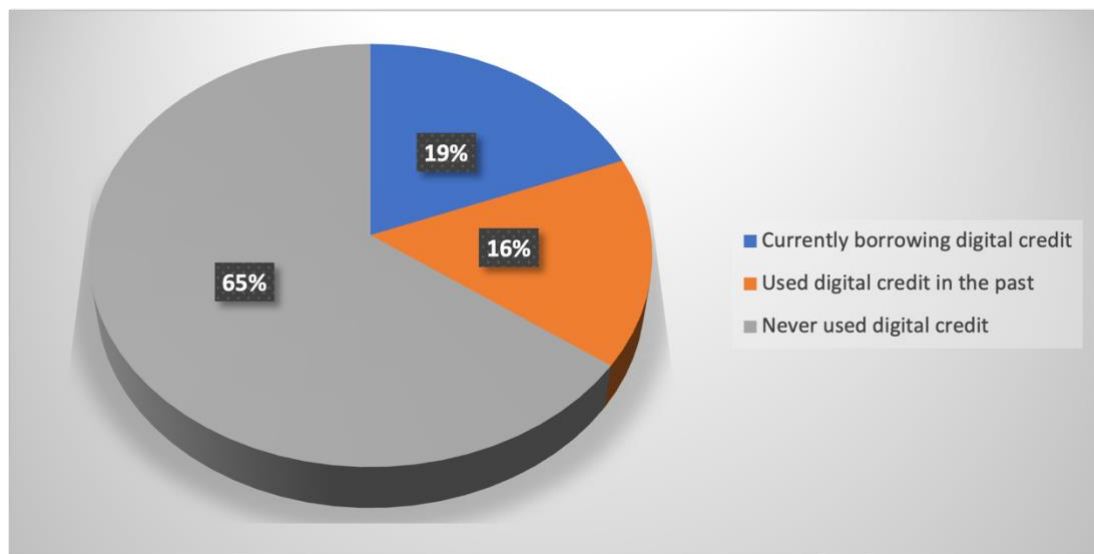
 Source: Totolo (2018)

In the Kenyan digital credit environment, there are three main actors: borrowers, lenders, and regulators (see figure 5). Primary actors indicate those who are directly involved in the operations of the digital financial industry and its legislation (Benn et al., 2016). The borrowers are the end-users of the digital credit industry, and the main targets which the regulations aim to protect. These borrowers could be both beneficiaries by using digital credit services, or be exposed to the risks of the digital credit industry. Digital credit borrowers in Kenya are usually mobile money subscribers since digital credit providers like Safaricom require them to be subscribers of their mobile money services.

Figure 5. The types of stakeholders in the digital credit environment in Kenya
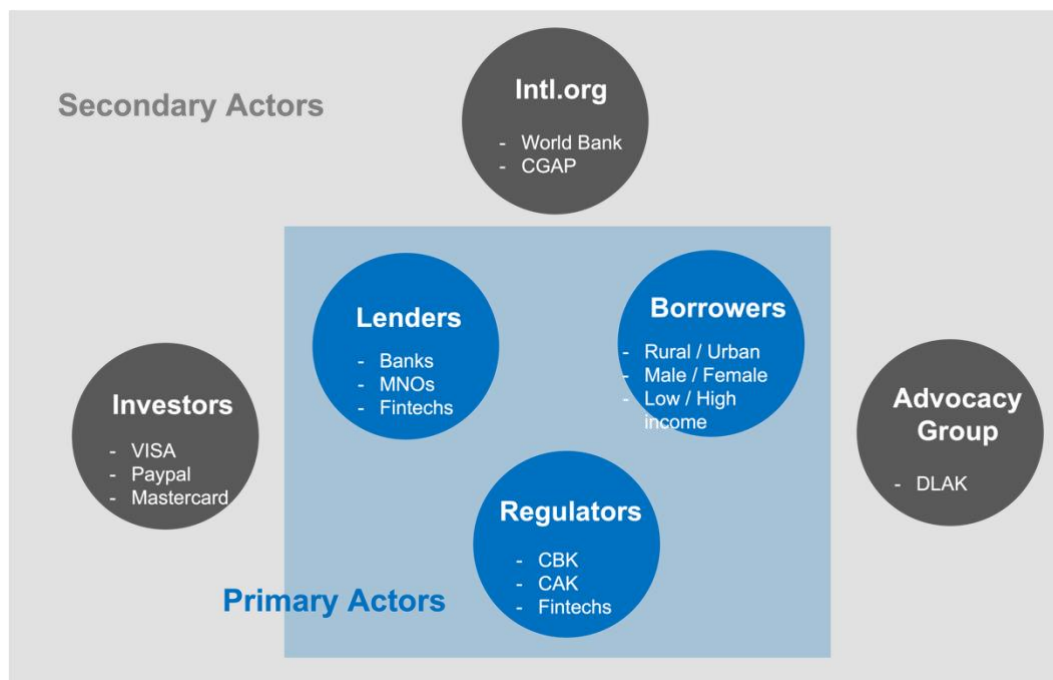
Source: Own elaboration

The lenders are those who provide digital credit services to customers. Banks and mobile network operators (MNOs) are important lenders in the digital credit market in Kenya. They together provide digital credit services, a "mobile banking loan (MBL)" (Francis et al., 2017). Banks develop their decision-making systems with the data provided both from MNOs and themselves, and decide the loan eligibility and credit limits of individual applicants more accurately (Hwang and Tellez, 2016). MNOs permit access to both their Know Your Customer (KYC) data and customer airtime/mobile money usage history to enable bank account opening and credit scoring (Airvantage, 2022). MNOs provide the customer with a mobile wallet and operate overall digital financial services through their platforms. M-Shwari and KCB M-Pesa are representative MBLs (Microsave Consulting, 2019). After the success of MBL, FinTech companies entered the Kenyan digital credit market, and started to provide mobile loan services based on an application system, the "FinTech loan (FTL)". They developed a credit scoring system by themselves and distributed the services through their own platforms, without a partnership with banks and financial institutions (Francis et al., 2017). Tala and Branch are

examples of FinTech companies, providing FinTech loan products (FTLs) (Microsave Consulting, 2019).

The report by FSD Kenya (Totolo, 2018), mentioned in the first paragraph of this section, found that 35% of Kenyan phone owners had used digital credit lenders (figure 4). The survey of the report analysed these data further. The survey is based on a nationally representative sample, 3,150 phone owners in Kenya, and 1,037 respondents answered that they had used or are currently using digital credit services. The 1,037 respondents were asked which digital credit lenders they had used, and multiple responses were allowed. As of 2017, M-Shwari and KCB M-Pesa, belonging to MBLs, were the most commonly used digital credit services among Kenyan digital credit lenders. Although the FinTech companies like Tala and Branch, new market entrants, had smaller usage shares compared to that of MBLs, they are catching up (Totolo, 2018).

Figure 6. Percentage of Kenyan phone owners who had ever used one of the digital credit lenders
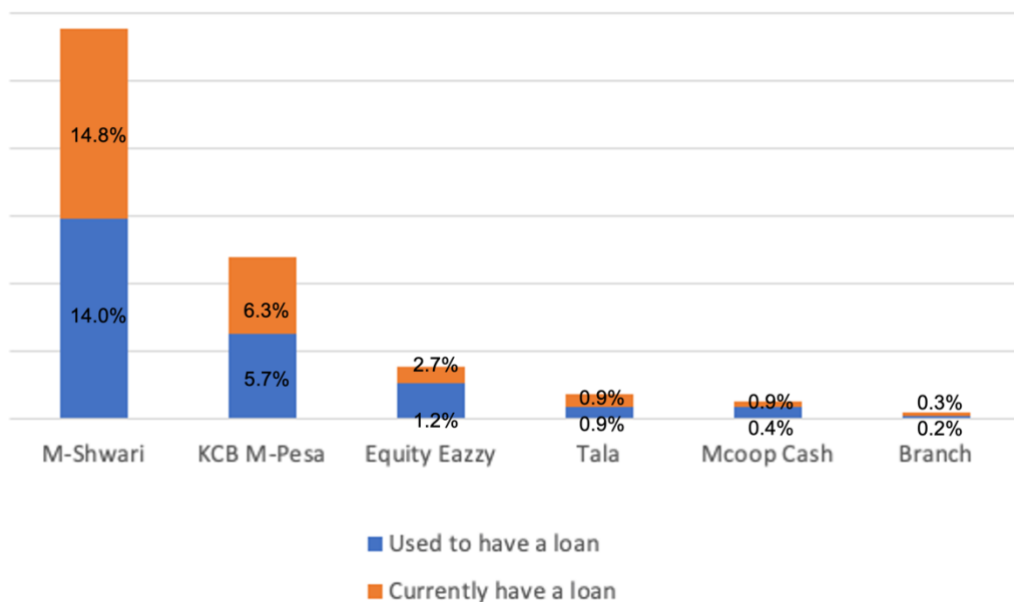
Source: Totolo (2018)

The regulators are the main actors who have the authority to control the digital financial industry, especially digital credit lenders. There are various regulators having real or potential authority (Mitheu, 2018). The Central Bank of Kenya (CBK) is the main regulator in Kenya which is responsible for: promoting financial stability; securing an effective and efficient payment; and the clearing and settlement system[11]. CBK has the authority to control digital credit lenders in order to stabilise the financial industry and protect consumers according to their rules and statutes[12]. The government has just set the Central Bank of Kenya Amendment Bill 2021 for regulating the digital credit industry for the lenders which were left unregulated (Kyalo-Joshua and Bundi, 2022).

The Communications Authority of Kenya (CAK) is also a regulator. CAK is the regulatory authority for the communications sector in Kenya, responsible for facilitating the development of the information and communications sectors including, broadcasting, cybersecurity, multimedia, telecommunications, electronic commerce, postal and courier services[13]. CAK is responsible for managing electronic commerce and cybersecurity, so they have the potential to control digital financial services including digital credit[14]. The parliament (Members of the Country Assembly) is also a significant actor in legislation regulating the digital credit industry. It has the authority to pass regulations regarding finance. The financial regulatory framework may vary depending on whether the parliament passes new regulations proposed by the CBK or other government authorities (CABRI, 2017).

Secondary actors, which are not directly involved in but indirectly related to the industry (Benn et al., 2016), exist in the digital credit environment. International organisations like the World Bank and the Consultative Group to Assist the Poor (CGAP) usually play a role as a think-tank by performing research concerning

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[11] https://www.centralbank.go.ke/

[12] The below link shows CBK has various types of regulations for regulating the whole environment of the finance market in Kenya.
https://www.centralbank.go.ke/policy-procedures/legislation-and-guidelines/

[13] https://www.ca.go.ke/

[14] https://www.ca.go.ke/industry/ecommerce-development/

topics about digital financial services[15]. CGAP consists of various members from governmental organisations to private companies like MasterCard and Flourish[16]. It shows that CGAP is closely related to FinTech firms and multinational financial companies that want to promote digital financial services to support their profit-seeking activities in Kenya, thus it is important to understand the power dynamics of international organisations in the digital credit industry.

Advocacy groups are associations of individuals or organisations, usually formally organised, on the basis of one or more shared concerns, and they attempt to influence public policy in their favour. The Digital Lenders Association of Kenya (DLAK) is an organisation established in 2019, bringing together the leading digital credit providers and associated stakeholders to facilitate mutual growth in the digital lending sector in Kenya[17]. The main objective of DLAK is to set standards in the industry, to collaborate with policy makers and other stakeholders in addressing industry issues, and to contribute to knowledge and learning. Since it serves as a representation of the interests of digital lenders, it is likely to discuss with regulators, CBK or CAK, on behalf of the digital lenders. DLAK also establishes the Code of Conduct in order to improve responsible operations[18]. However, instead of digital credit lenders, DLAK has already been subject to criticism, as digital credit lenders have been viewed as the main provokers of over-indebtedness. Several reports have harshly criticized the lenders, leading to negative publicity. In an effort to distance itself from the negative impact of over-indebtedness on vulnerable populations, DLAK has attempted to change its name to Digital Financial Services Association of Kenya (DFSAK).

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[15] The link below shows that CGAP has conducted numerous studies on digital credit. https://www.cgap.org/search?keywords=digital+credit
[16] The link below shows various members of CGAP, and as mentioned above, many financial companies and FinTech companies are participating https://www.cgap.org/about/member-organizations
[17] https://www.dlak.co.ke/
[18] https://www.dlak.co.ke/dlak-code-of-conduct.html

The investors who fund digital credit lenders are not directly related to the digital credit environment in Kenya, but they usually support FinTech companies which are supplying the services and expect a return from the investment. The FTL services like Tala and Branch have been funded by major financial companies such as VISA[19], Paypal[20], and Mastercard[21]. The investors may ask lenders to push for more profits, which could lead to even higher interest rates for their digital credit products.

As such, various stakeholders influence each other while pursuing their own interests, forming Kenya's digital credit industry. This thesis will focus more on the behaviour of the primary actors. The study of digital credit is at an early stage. The study by Mader et al. (2022), which explores the present insights from an Evidence Gap Map (EGM) on the enablers and barriers, and subsequent impacts of digital financial services, notes that although there are studies on various digital financial services, only very few examine digital credit. Another EGM completed by The Mastercard Foundation partnership for Finance in a Digital Africa (FIDA), which provides the user with an overview of the impact literature on digital financial services including digital credit, also shows there are few studies analysing digital credit. Therefore, this study focuses on studying the basic structure of the digital credit industry in which primary actors are essentially related, and which have not yet been explored. The inter-connection between secondary actors and primary actors of course needs to be studied in the future.

1.5 The shadow of digital credit

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[19] https://www.cnbc.com/2021/10/14/tala-fintech-for-unbanked-raises-145-million-for-global-crypto.html
[20] https://techcrunch.com/2019/04/08/partnering-with-visa-emerging-market-lender-branch-international-raises-170-million/
[21] http://www.invest.go.ke/econet-group-mastercard-collaborate-fintech-solutions-covid-19-response-africa/

Digital credit has been expected to allow users to access a range of banking services anytime and anywhere, leading to the expansion of financial inclusion, and eventually contributing to economic development (Durai and Stella, 2019; Hwang and Tellez, 2016), because borrowers can utilise loans from digital credit to solve problems of liquidity and to invest in their business (Kaffenberger et al., 2018). In a study in Uganda, for example, Riley (2019) empirically shows that women who received their digital credit loan through a mobile platform had 15% higher business profits than others who did not receive the loans.

However, except for a few studies, a knowledge gap remains regarding whether, and if so how, digital credit services improve the economic conditions of households in Kenya. Rather, the critics are concerned about digital credit itself. Firstly, the belief that digital credit could broaden financial inclusion to credit by removing some of the obstacles of access to finance (Carstens, 2019; Patwardhan, 2018, pp. 57-89), has been questioned. It was believed that digital credit could reduce transaction costs and information asymmetries (Chen and Mazer, 2016), which would remove the obstacles that the traditional loan services have suffered from. However, Venet (2019) argues that digital credit services were not originally designed with vulnerable people in mind, notably vulnerable women, uneducated individuals, and the poor living in rural areas. Questions therefore remain about its suitability as a financial instrument for the vulnerable, and it being a means of enhancing financial inclusion to vulnerable populations. Empirically, the study by Kaffenberger et al. (2018) also suggests that temporary employees and farmers utilise digital credit less often than young males residing in urban regions. In addition, Nan and Markus (2019) assert that high income urban households, who have not been considered financially disadvantaged, are more inclined to utilise digital credit. However, these studies lacked data to compare levels of financial inclusion through digital credit services with other current lending services, and what socio-economic characteristics of the underserved made it difficult for people to use digital credit. Therefore, these issues will be more thoroughly examined in chapter 2.

Moreover, as with microfinance, the most concerning issue about digital credit is the question of over-indebtedness. After MFIs pursued profitability, they faced rising criticism for abusing their poor consumers by offering irresponsible financing to them with high interest rates (Cull et al., 2009; Collins, 2008). Imprudent lending exacerbated poverty, and emerging nations such as Bosnia and Herzegovina, Morocco, Nicaragua, Pakistan, and India finally suffered over-indebtedness problems among microfinance consumers (Kappel, 2010).

These microfinance problems may also be found in the digital credit market. Approximately 50 percent of digital borrowers in Kenya stated that they had not met their digital credit payment dates, and 12 percent had defaulted on digital credit loans (Izaguirre et al., 2018; Kaffenberger et al., 2018). Many experts in particular express worry over over-indebtedness in Kenya (Bateman et al., 2019; GSMA, 2022; Wright, 2017). Individual over-indebtedness in Kenya is currently nearing crisis proportions (Bateman et al., 2019). Wright (2017) further cautions that the current over-indebtedness scenario is out of control, and that the Kenyan government should adopt immediate actions and regulations to manage and stabilise the rapid rise of digital credit. Kenyan digital credit industry, once considered "Silicon Savannah", has begun to fall into perpetual debt crisis after the proliferation of fintech (Donovan and Park, 2019).

Even worse, the default rates of digital credit borrowers increased dramatically after the economic shock triggered by the COVID 19 pandemic. According to the FinAccess Household Survey 2021[22], 10.7 percent of the respondents who had borrowed money had defaulted on their loans. However, 50.9 percent of MBL borrowers and 46.3 percent of FTL borrowers stated that they had defaulted. These figures are significantly higher than average default rates. According to these results, among more than ten other loan providers, the top two loan providers where a majority of respondents said they had defaulted on a loan service were both digital credit lenders, MBL and FTL. This not only shows that digital credit

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[22] https://finaccess.knbs.or.ke/home

borrowers have been more affected by external economic shocks, but also that people who use digital credit are more likely to default than the other borrowers using different types of loan services. In particular, the fact that the default rate of digital credit is more than 50 percent implies that consumers are in a dangerous situation. The causes of high default rates related to digital credit will be examined in chapter 3.

There are also concerns about digital credit being used for the wrong purposes, especially betting. Technical advancements have enabled convenient access to digital credit that could be utilised for gambling or betting (Chamboko and Guvuriro, 2021; Rosen, 2022). 57 percent of Kenyan adult surveyed by the US research firm GeoPoll had attempted betting, and one-third of those reported betting at least once per day[23]. The problem here is that the vast majority had used digital credit for betting through their mobile phone (Rosen, 2022). There have been various alarming news stories in Kenya reporting the problem of betting by utilising digital credit services[24].

What are the main factors contributing to these various problems with the digital credit industry? One key possible reason for the high risks of the digital credit industry is that the digital credit industry in Kenya has grown significantly without a proper regulatory framework that could contribute to consumer protection (Mitheu, 2018; Donovan and Park, 2019). Although digital borrowers in Kenya have accused digital lenders of predatory practices such as imposing high interest rates (Brailovskaya et al., 2021; Owens, 2018), there were no proper regulation in place that would control digital credit lenders (Akram, 2020; Donovan and Park, 2019; Brailovskaya et al., 2022). Historically, CBK determined that mobile money services

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[23] https://www.geopoll.com/blog/gambling-kenya-mobile-phones-football/

[24] There have been many news articles that many Kenyan have used digital credit services for betting like below:
https://www.theafricareport.com/518/fintech-debtors-bettors-and-profits/
https://www.cgap.org/blog/sports-betting-highway-hell-or-ramp-digital-finance
https://sk-ihreschneiderei.de/kenya-leads-africa-in-sports-betting-and-playing-28/
https://www.techarena.co.ke/2020/11/20/mobile-phones-and-sports-betting-in-kenya/

were not banking services, allowing a lighter regulatory touch for the booming business, preventing mobile money services from being shackled by onerous restrictions (Mwega, 2014). This loosening of regulations has extended to the digital credit business sector. Before 2021 (Didenko, 2017; Muli, 2020), there were no regulatory rules governing digital credit lenders, hence the digital credit business was not supervised by any regulator (Muli, 2020). Consequently, the number of customers in a vulnerable position, who are exposed to a potentially exploitative digital credit environment due to the absence of an adequate financial regulatory framework, has increased. Chapter 4 will explore this question of (limited) regulation.

The lack of regulation has not only caused problems related to high default rates and over-indebtedness. The infringement of data privacy issues on the use of digital credit has also been raised as an issue under the limited regulatory framework. FinTech firms are exempt from the obligation imposed on regulated lenders to report to CRB in Kenya – a formal conduit for sharing good and bad borrower information in a controlled environment (Ombija and Chege, 2016). This is because FinTech firms are not under the realm of CBK, which regulates formal financial services like banks. That gives the FinTech lender discretion to determine the method in which good or negative information about the borrower is conveyed. Here, problems with consumer protection risks could emerge. Typically, digital credit applications gather borrowers' phone information, including contacts, and require access to messages to examine the credit history of mobile money transactions for credit assessment and as a requirement for loan disbursement (Njanja, 2021). In the event that a borrower defaults on a loan, rogue lenders utilise some of the obtained contact information to collect the debt. In addition, there could be more problems that threaten consumers within Kenya's digital credit industry, but a lack of in-depth research on the digital credit industry in Kenya indicates there are limits to knowledge and identifying any such problems.

1.6 Motivation for this study and research questions

Digital credit is often regarded as an enabler for the expansion of financial inclusion in LMICs, and also as a facilitator of improving the household economy such as increasing income or consumption smoothing. However, this promising picture is far from the real story about the situation of digital credit in Kenya.

Firstly, the expectation that digital credit may increase financial inclusion, thanks to its unique characteristics, has been questioned. The assertion mentioned above that digital credit was not originally designed for vulnerable individuals is an important one (Venet, 2019), because it argues digital credit services cannot be distributed to financially excluded populations properly without risks. Research on these issues remains limited, however, some studies have examined whether digital credit has accomplished to financially include vulnerable populations; but there are no studies yet that have compared the impacts of digital credit with that other lending services. This study seeks to address these gaps in knowledge.

Also, the negative impacts of digital credit have been frequently reported (Chamboko & Guvuriro, 2021; Kaffenberger et al., 2018; Rosen, 2022; Wright, 2017). Among them, the most problematic has been that digital credit borrowers have shown a higher default rate than borrowers of other loan services, including informal loans, which are regarded as risky loan products. The high default rate not only means that consumers' economic lives are in crisis, but also that the business sustainability of the lending companies is threatened. Therefore, it is necessary to identify the factors which have caused the people who use digital credit to reach default more frequently, and to devise a policy to lower the default rate. This study will contribute to addressing these questions.

A study of the digital credit market needs to examine default rates, but also the various other consumer protection problems that digital credit borrowers are currently facing. Consumers of digital credit seem to have great difficulties due to problems of over-indebtedness, and infringement of data privacy. However, within

Kenya there has been limited research to clearly identify the consumer protection problems in the digital credit industry in an empirical way. Research which can identify the problems which consumers are experiencing can offer appropriate recommendations on regulations. In addition, it is vital to study the regulatory environment, which could be one of the primary sources provoking the adverse effects in the digital credit environment. Digital credit has been provided in Kenya without any specific regulatory rules governing the providers. In order to prevent this issue, The Central Bank of Kenya started to regulate the lenders with the adoption of the CBK Amendment Bill (CBKB) 2021. However, it is necessary to examine how much the CBKB 2021 will genuinely contribute to the elimination of consumer protection risks.

The following research questions are raised and addressed through this thesis, and dealt with in different chapters:

1.) Do the socio-demographic and economic characteristics of poor consumers cause problems in accessing digital credit? Can financially vulnerable populations access digital credit compared to other traditional loans? (Chapter 2)

2.) What is the reason for the high default rate with digital credit? Is it because of financially vulnerable populations being the main customers of digital credit, or is it because of irrational financial behaviour such as multiple borrowing? Or is it a problem with digital credit itself? (Chapter 3)

3.) What consumer protection issues do borrowers face in using digital credit? Can the current legislation designed for digital credit itself contribute to mitigating consumer protection problems? (Chapter 4)

1.7 Methodology

In order to answer the research questions comprehensively, this study adopts a mixed methods design, consisting of qualitative and quantitative data collection and analysis. The procedure of analysis for each study and chapter is described in figure 7 below.

Figure 7. The Procedure of analysis for each chapter
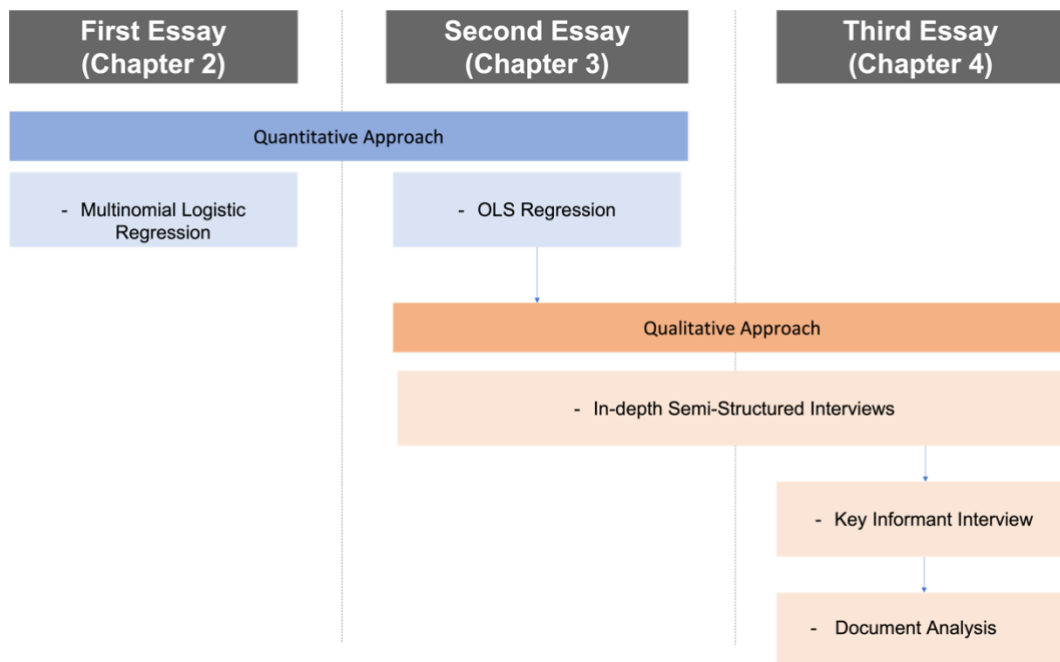
Source: Author's own elaboration

1.7.1 Quantitative approach

This study used secondary data from the FinAccess Household Survey 2019 (FHS 2019) done by Financial Sector Deepening Kenya (FSD Kenya), the Central Bank of Kenya (CBK), the Consultative Group to Assist the Poor (CGAP), and the Kenya National Bureau of Statistics (KNBS)[25]. The FinAccess Household Survey 2019, which was a survey covering 8,669 people, is expected to increase the reliability of the results because the samples were taken in a way that could represent all groups in Kenya. The sample was randomly selected based on the overall population

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[25] The data and report are available at the below link:
https://finaccess.knbs.or.ke/reports-and-datasets

composition of Kenya, so it can be said to have a representation that reflects the entire population of Kenya (FSD Kenya, 2019). The FinAccess survey aimed to measure and track the financial behaviours among Kenya's population from the demand side. In addition to household economic activity and financial service use patterns, the survey also collected information on the demographic characteristics of households.

Using the FHS 2019, I conducted multinomial logit regression for chapter 2 to determine the extent to which the socio-economic and demographic characteristics of the underserved households had impacted their use of digital credit services. It would prove whether the financially underserved populations could access digital credit services in spite of their vulnerable characteristics, or whether the characteristics hinder the use of digital credit services. Multinomial logistic regression is a classification approach that generalises logistic regression multiclass situations involving three or more discrete outcomes (Greene, 2012). It is typically employed to estimate the probability of several outcomes for categorically scattered dependent variables (Cameron and Trivedi, 2005; Gujarati, 2003). This method defines logit models for the dependent variable so that each categorisation level may be compared to a reference category. In the first paper (chapter 2), the decision not to use loan services is utilised as a reference category for the use of various loan services: MBL, FTL, formal loan, and informal loan. Rather than choosing a simple regression model that shows the simple possibility of consumers choosing digital credit, the adoption of multinomial logistic regression, which can compare the possibilities of various loan choices together in addition to digital credit, would enable the comparison with other loans. In the end, this model allows analysis to identify the extent to which the socio-economic and demographic characteristics of potential consumers affect their choice on various loans, and will focus particularly on digital credit.

The FHS 2019 data are also used to conduct OLS regression analysis for chapter 3. This analysis assists in identifying the causes of the higher default rates of digital

credit compared to those of other loans. Although the data should fulfil the requirements of exogenous and multicollinearity (Abdallah et al., 2015; Smith & Sasaki, 1979), OLS regression could be the best linear unbiased estimator available in examining whether the use of digital credit services influences the possibility of default by drawing out factors determining the default (Fox, 2015). Therefore, OLS regression was used to analyse whether the use of digital credit services itself affects more the likelihood of default, or whether the socio-demographic factors of the borrowers more affect the likelihood, by identifying the causes that determine default.

1.7.2 Qualitative approach

This study adopts a qualitative approach and methods as well as a quantitative approach. As a main strategy for the qualitative methods, I conducted semi-structured interviews with 30 people (see table 1) who were at the time currently using or had used digital credit services, in order to identify the risks and issues borrowers have been confronting while utilising digital credit. The snowball sampling scheme, which is one of the major methods in mixed methods research, was used to recruit interviewees through other participants' networks (Onwuegbuzie and Collins, 2007). Snowball sampling allowed for a diverse range of respondents to be interviewed, including those engaged in petty trading (businesses), young people, men, women, and others. From June through to August 2021, 30 semi-structured interviews were done. In particular, I conducted interviews in four of Nairobi's largest slum areas, Kibera, Mukuru, Soweto, and Mathare, to confirm the impact of digital credit on the vulnerable populations. As the quantitative data of FHS 2019 represents the Kenyan population as a whole, it is difficult to delve deeply into the impact of digital credit on vulnerable people. However, conducting interviews with people living in Kibera, Africa's biggest slum (Desgroppes and Taupin, 2011), and other slum areas, allows us to explore the impact of digital credit on vulnerable people in greater depth.

Especially in Kibera, most of its habitants live in extreme poverty, earning less than US$ 1 a day[26]. The majority of them are day workers who rely on low-wage work for survival. These poor and vulnerable groups are considered to be most affected by the consequences of digital credit, so interviews with them can best contribute to enhancing understanding about side effects of digital credit.

Table 1. Overview of semi-structured interviews

The number of interviewees	30 respondents
The places of interviews	Kibera, Mukuru, Soweto, Mathare
Interview period	17 June 2022 – 14 August 2022
Criteria for interviewees	People who are currently using digital credit, or have used digital credit

I developed semi-structured interview guides containing six components (see Annex 6). The first component requests demographic information from respondents. The second section discusses how they utilised digital credit services, including types of digital credit services they chose, loan amounts, multiple borrowings, consumption patterns, etc. The third section examines the good and negative impacts of digital credit on their lives. The fourth section inquires whether borrowers are familiar with consumer protection and data protection legislation. The fifth segment covers misleading advertising and fraudulent lenders. Finally, I inquired whether borrowers feel that digital credit services require financial regulations.

The data collection for this study was carried out by Dr. Dorice Agol, a multidisciplinary researcher and consultant with over 20 years of practical experience in the development sector in Kenya, due to my inability to travel to

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[26]
https://mirrorofhopecbo.org/ourimpact/#:~:text=Most%20of%20Kibera%20slum%20residents ,little%20to%20very%20poor%20ventilation.

Kenya during the pandemic. However, I was able to oversee the entire data collection process remotely through regular online meetings, enabling us to obtain the high-quality data that we had planned for. The interview transcripts were analysed using NVivo to create a coding structure that highlights topics of interest related to the different service use patterns, implications and risks associated with the usage of digital credit by borrowers.

The semi-structured interviews with borrowers sought to capture and reflect on the demand-side view. In addition, to grasp the perspective of the suppliers, I conducted Key Informant Interviews (KIIs) with digital credit lenders. I had conversations with officials from the MBLs. This method enabled me to comprehend the dynamics of the digital credit business in the context of the interdependence of various stakeholders. With their specialised expertise and knowledge, the officials of MBL offered their perspective on the difficulties facing the digital credit business as well as insights into the nature of the problems. They provided me with new information by telling me about new and often invisible issues that only the officials know about. Face-to-face interviews were used for all interviews. However, I failed to do interviews with the officials from FinTechs, since the majority of FinTech lenders who supply FTLs did not respond to or refused the interview requests because they had already been or anticipated being subject to criticism. This perception stems from their reputations being damaged due to the bad news coverage about them[27]. Thus, I had no choice but to be satisfied with interviewing two mobile bank officials providing MBLs. I sought to mitigate this gap in my data arising from no interviews with FinTech officials and regulators by analysing various documents and reviewing news coverage.

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[27] There are many news articles criticising fintech firms. See the below links for example.
https://www.bbc.com/news/world-africa-57985667
https://www.theafricareport.com/22692/opera-denies-hindenberg-claims-of-predatory-loans-in-nigeria-kenya/
https://www.bloomberg.com/news/features/2020-02-12/tech-startups-are-flooding-kenya-with-apps-offering-high-interest-loans

Document analysis therefore became another important strand of my methods. I tried to rely on various, and at least two, sources of evidence. I triangulated information by employing diverse data sources and methodologies. In conjunction with the semi-structured interviews and KIIs, document analysis supplemented the data collected for this study. I focused mostly on official papers provided by the Kenyan government, the CBK Amendment Bill (CBKB) 2021, and the Report on the CBK Amendment Bill. I evaluated how much the CBKB 2021 could reduce the consumer protection risks that I identified through the semi-structured interviews. I also analysed the Report on the CBK Amendment Bill. It contains the proceedings of the Department Committee on Finance and National Planning on its consideration of the CBKB, and the content about the meetings between regulators, the committed members of parliament and the ten stakeholders whom I failed to interview. Therefore, I could understand the intentions of the lenders and regulators to some extent through examining this document. In sum, document analysis supplemented the understanding of the findings from the semi-structured interviews and quantitative methods.

1.8 Summary of empirical thesis chapters

The empirical section of this dissertation consists of three studies (chapters two, three and four) that examine the impact of digital credit on households in terms of financial inclusion, repayment, and consumer protection, and the regulation surrounding Kenya's digital credit environment. While the three empirical chapters investigate the same topic of research on digital credit, all studies have a distinguished literature review, methods section, results, discussion, and conclusion. The various results from the three studies are synthesised and discussed in chapter five, offering a comprehensive overall conclusion of the argument of this thesis.

Quantitatively, **chapter 2** seeks to answer research question 1: Whether the socio-demographic and economic characteristics of poor consumers cause problems in accessing digital credit, or are there also other factors? It examines whether the financially excluded population's socio-economic characteristics have influenced the decision to adopt digital credit by using a multinomial logit regression model. The results show that the use of both digital credit services, MBL and FTL is influenced by the level of education, meaning that less-educated people are less likely to use digital credit. However, the use of MBL is more influenced by the socio-economic characteristics of the borrowers than the use of FTL. Female and low-income groups are less likely to use MBL as a formal loan. In contrast, the use of FTL is less affected by the variables of sex and the level of income, meaning that people, who are female or of low-income could access FTL just as male and high-income classes could. However, it should be noted that easy access to loans is not always a good sign. FTL services could make the borrowers use excessive borrowing, leading to late-repayment or even default.

Chapter 3 answers the research question 2: Is the high default rate for digital credit due to the characteristics of consumers or to problems with digital credit products themselves? The study used mixed methods combining OLS regression analysis and semi-structured interviews with digital credit borrowers in Nairobi, to explore the major drivers of high default rates on digital credit. According to the quantitative approach, the use of digital credit itself influences the experience of default more than other factors such as consumers' economic and demographic features. It demonstrates that the use of digital credit has a greater effect on the likelihood of default than borrowers' characteristics. Also, the study qualitatively identified the reasons why the use of digital credit itself influences the possibility of default; the characteristics of digital credit, such as high interest rates, short repayment periods, and the inducement of over-borrowing, have made it harder for borrowers to repay the loans. The quantitative and qualitative findings contradict the belief that the high default rate for digital credit may be attributed to the socio-demographic and economic features of their vulnerable borrowers.

In **chapter 4**, I examined research question 3 about consumer protection issues and the current legislation for mitigating consumer protection problems. Through KIIs with official of MBLs and semi-structured interviews with consumers of digital credit, I conclude that various consumer protection risks are widespread in the Kenyan digital credit environment. The problems of digital credit products have harmed customers; the features of digital credit such as high interest rates, aggressive business techniques for consumers to borrow continuously, and the existence of unlicensed lenders may result in increased risks. After default, there are also cases of improper debt collection by credit suppliers. In addition, the interviews reveal that there are issues with transparency owing to data privacy violations and deceptive marketing. To tackle these consumer protection concerns, the Central Bank of Kenya Amendment Bill 2021 was recently introduced in 2021. As the first attempt to regulate the digital credit market, this is significant. However, the study found that the regulation appears to be incomplete in terms of reducing the risks. Based on the findings from the study, I conclude that the new bill has limits for solving the various problems that I identified in the interviews. Moreover, some clauses of the bill might put both borrowers and lenders at danger.

To summarise, this thesis empirically explores the impact of digital credit on Kenyan households from several perspectives by listening to the views of various stakeholders, digital credit borrowers and lenders, and also by constructing a picture of the whole digital credit business with a mixed methods approach. The results contribute to filling the knowledge gaps about the impact of digital credit which were confirmed through the EGMs described in section 1.3[28]. The results question the myth of the benefits of digital credit and demonstrate the need for better regulation and more research.

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[28] There are two representative EGMs exploring the current literature about digital financial services including digital credit. Two different EGMs can be found below links: https://www.ictd.ac/publication/enablers-barriers-and-impacts-of-digital-financial-services-insights-from-an-evidence-gap-map-and-implications-for-taxation/ https://egm.financedigitalafrica.org/

2. Who uses digital credit? Socio-economic characteristics of digital credit users in Kenya

Abstract

Digital credit, also known as mobile loan services, has achieved remarkable success in Kenya. Its unique characteristics are expected to give new opportunities to those who have been excluded from formal loan services due to their socio-economic status. However, there is a lack of evidence proving this positive expectation about the effect of digital credit on financial inclusion, since few papers explore how many financially excluded populations have accessed digital credit. In this paper, the results from a multinomial logistic regression model show whether the socio-demographic and economic characteristics of financially vulnerable sections of the population are actually correlated to access to digital credit.

It is notable that rural residence does not affect the use of both types of digital credit services: mobile banking loans (MBL) and fintech loans (FTL), meaning rural residents use financial services in the same way as urban populations. In contrast, the level of education has close association with the use of digital credit services. However, the use of FTL and other variables such as sex and monthly income do not seem to have any statistically significant relationship. Furthermore, females or low-income populations which are typically financially vulnerable, use FTL services like any other group without any constraints. However, the findings on MBL use show that MBL was relatively less used by vulnerable groups that are usually financially excluded from sources such as formal loan services. The populations who are in large families, women, low-educated, low-wage, and casual workers are less likely to use MBL. This indicates that MBL services are comparatively less well-distributed or accessible to vulnerable people, while FTL services are more accessible to a certain extent.

2.1 Introduction

After the great success of M-Pesa in Kenya, provided by Safaricom and the Commercial Bank of Kenya, the digital financial industry has grown to the level that 35 million customers[29] in Kenya are using digital financial services, which is around 63 percent of the Kenyan population of 56 million in 2022[30]. Therefore, digital financial providers have been concerned with expanding their service lines, especially loan services. In 2012 they introduced a new portfolio model for distributing loan services to their current mobile money users, "M-Shwari", known as digital credit. Digital credit is a mobile loan disbursed and recovered rapidly, often in 30 days or less, and generally consists of smaller-sized loans than conventional credit (Hwang, 2016). Advocates of digital credit expect it to be a transformative financial product contributing to improving financial inclusion by broadening access to financial services (Bharadwaj and Suri, 2020; Björkegren and Grissen, 2018), and this improvement of financial inclusion could eventually lead to economic development for disadvantaged and low-income segments of society (Demirgüç-Kunt and Klapper, 2012; World Bank, 2017).

The expansion of M-Shwari has intrigued FinTech companies and thus motivated them to enter the digital credit industry in Kenya where the demands for loans are high. Since FinTech companies entered the market to supply digital credit in Kenya, the services have grown tremendously. According to Gubbins and Totolo (2018), 35 percent of Kenyan adults say that they had already used digital credit services by 2017. The advocates of digital credit argue that the unique features of digital credit — low transactional and operational costs, the simple process, and remote use (Chen and Mazer, 2016)— could contribute to the wide use of digital credit and the

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[29] https://africa.businessinsider.com/local/markets/kenyas-mobile-money-transactions-surge-by-63-in-2021-report/tmkw1rn#:~:text=According%20to%20the%20Kenya%20National,32%20million%20to%2035%20million.

[30] https://www.worldometers.info/world-population/kenya-population/

expansion of financial inclusion (Aron and Muellbauer, 2019; Bharadwaj and Suri, 2020; Björkegren and Grissen, 2018). Branch International[31], one of the FinTech companies providing digital credit services in low-and middle-income countries (LMICs) including Kenya, say that they offer digital credit services across emerging markets in order to spur human capital development, and advertise their service with the slogan "Fueling a world of opportunity" — freedom to use it whenever and wherever, no paperwork, without banking history[32].

However, has digital credit, as advocates of financial inclusion say, given new opportunities to people who were previously excluded from financial services? According to the literature examining how much digital remittance and transactions have contributed to financial inclusion, the results are mixed. In terms of the level of income, many studies commonly argue that a low-income level excludes people from financial services and also digital financial services (Alafeef et al., 2012; Ammar and Ahmed et al., 2016), since low-income populations do not feel the need to use digital financial services. In contrast, digital financial services seem to contribute to improving financial inclusion levels in rural area (Batista and Vicente, 2013; Kikulwe, 2014; Munyegera and Matsumoto, 2016), and even the household economy could be improved by the use of remittances (Batista and Vicente, 2013). A low level of education is regarded as a major factor stifling the diffusion of digital financial services in LMICs (Alafeef et al., 2012; Ammar and Ahmed, 2016; Dzogbenuku, 2013; Johnson and Arnold, 2012). Conversely, Hinson (2011) suggested a different perspective and argued that digital financial services would be a better option for underserved populations because they are easier to use than the formal services provided by conventional financial institutions. Regarding gender, some literature asserts that gender discrimination leads to inequity in

[31] Branch International is a FinTech start-up company, assessing creditworthiness of the customer using smartphone data. They have attracted more than 3 million customers and provided more than 15 million loans in Kenya, Nigeria, Tanzania, Mexico, and India. Branch is working to expand access to credit in countries where the average middle-class borrower might not have a credit history or even a bank account.
[32] https://branch.co/

financial behaviour, which discourages women from utilising both formal loans and digital financial services (Alafeef et al., 2012; Ammar and Ahmed, 2016; Johnson and Arnold, 2012; Potnis, 2014). Johnson and Arnold (2012) suggest that, compared to traditional banking services, digital financial services provide women with more access to funding thanks to the easier registration procedure and less stringent verification requirements. To summarise, the results on the impact of the use of digital remittance and transaction services on financial inclusion of the financially vulnerable populations such as low-income groups and women has not been clear.

Unlike the literature on digital remittance and transaction services, there are few academic studies showing clear evidence on the effects of digital credit on financial inclusion, despite the high expectations of digital credit having a positive impact on financial inclusion. The analysis on digital credit is still in a nascent stage compared to the research on digital remittance and transaction services, since it has been introduced relatively late compared to other digital financial services[33]. An Evidence Gap Map conducted by MasterCard Foundation Partnership for Finance in a Digital Africa[34], which provides the user with an overview of the impact literature on digital financial services including digital credit, shows that there are just a few papers dealing with the theme of digital credit adoption and use by borrowers. Also, there are very few studies examining whether digital credit services have been truly accessed by the target populations for greater financial inclusion. To fill this gap, the study presented in this chapter will provide evidence about how much digital credit has contributed to increasing access to financial services to vulnerable people compared to traditional loans, and which characteristics of the borrowers have interfered with the uptake of digital credit.

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[33] Digital remittance and transaction services had been launched in 2007, but digital credit was launched in 2012.
[34] https://egm.financedigitalafrica.org/

2.2 Literature review

2.2.1 Financial inclusion

Access to financial services is considered to be one of the major enablers of economic development (Demirgüc-Kunt and Klapper, 2012). However, according to the most recent Findex data[35], about one-third of individuals (1.7 billion) still remained unbanked (no bank account) in 2017. In particular, the World Bank mentioned that about half of the unbanked persons were women from low-income households in rural regions, or people who were unemployed[36]. Therefore, these groups, excluded from formal financial services, have been more dependent on alternative loan services in informal ways, instead of using loans provided by formal financial institutions like banks and Savings and Credit Cooperative Organizations (SACCO). Instead of these conventional lending services, alternative financial services that can be provided to people who are excluded from the financial industry have been considered from various angles, and a typical example is microfinance. Microfinance began as a movement ensuring that financial services are provided to those who cannot access formal financial services (Christen et al., 2004; Hulme and Mosley, 1996; Robinson, 2001). It was primarily intended to alleviate poverty and empower women while providing people with an opportunity to become self-sufficient (Yunus, 2004). Microfinance for the poor has grown fast since the 1990s: the total number of customers had risen to 211 million in 2013, with 114 million having been among the poorest upon registration (Reed et al., 2015).

Despite its great success in terms of reaching the poor in developing countries, microfinance has faced criticism regarding its overall impacts on poor or vulnerable groups. In the last decade, empirical research has been exploring the assessment of the impact of microfinance institutions (MFIs) on the underserved. Many critics (Duvendack and Mader, 2020; Stewart et al., 2010) argue that microfinance has

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[35] https://www.worldbank.org/en/publication/globalfindex/Report
[36] https://www.worldbank.org/en/topic/financialinclusion/overview

worked as an alternative channel to traditional financing, but it has not brought transformative improvement to developing countries. They assert that microfinance usually shows a modestly positive impact, but not dramatic effects. More negatively, microfinance has led customers into a debt trap. CGAP reviewed a diverse body of evidence on microfinance with a year-long financial diaries survey of 400 active borrowers in rural southern India. It found that about 21 percent of households in the sample had suffered from high levels of over-indebtedness, financial distress, and debt dependence (Prathap and Khaitan, 2016), mainly because MFIs had imprudently delivered their services to the poor who were not able to afford to pay back what they borrowed.

As the debate on microfinance has continued, many experts are turning to a broader notion, "financial inclusion," which brings microfinance together with efforts to provide savings, insurance, and payment services to underserved communities (Cull and Morduch, 2017). As defined by the World Bank, *"financial inclusion refers to efforts to deliver affordable financial services to people excluded from formal financial services, responsibly and sustainably with various services, including transactions, payments, savings, credit, insurance, and other innovative financial services"*[37].

Notably, mobile devices have become an important tool to promote financial inclusion for the previously unbanked population in LMICs (Kanobe et al., 2017). The World Bank also puts emphasis on the importance of mobile devices for financial inclusion through the Universal Financial Access 2020 initiative[38].

2.2.2   The rise of the digital credit market – the case of Kenya

Digital finance providers offer various kinds of financial products, including digital payments, digital transfers, digital savings, digital credit, and digital insurance

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[37] https://www.worldbank.org/en/topic/financialinclusion/overview
[38] https://www.worldbank.org/en/topic/financialinclusion/brief/achieving-universal-financial-access-by-2020

(Lauer, 2015). Digital credit has especially gained attention as a possible substitute for formal finance and microfinance services. Digital credit—providing quick, small loans remotely over digital channels—is a rising trend in LMICs[39]. The services of digital credit are expected to contribute to improving financial inclusion (Aron and Muellbauer, 2019; Bharadwaj et al., 2020; Björkegren and Grissen, 2018). This is because digital credit is different from traditional bank and microfinance loans in three ways: 1) transaction costs and operational costs are lower; 2) the decision-making processes of loan eligibility and approval are instantaneous; 3) it is easy to use (Chen and Mazer, 2016). The use of digital credit has rapidly increased especially in Kenya, which is a leading country where the digital financial industry has become well-rooted. In Kenya, 35 percent of adults had already used digital credit services in 2017 after the first launch in 2012 (Gubbins and Totolo, 2018). The number of digital credit users grew by 6 million in only 5 years.

The first success of digital credit in Kenya was a driving force to gain worldwide attention. Most early digital credit services like M-Shwari and KCB M-Pesa in Kenya are based on partnerships between MNOs and formal financial institutions, including banks, which developed the "mobile banking loan (MBL)" (Francis et al., 2017; MicroSave Consulting, 2019). The MNOs act as channels for disbursing and collecting the loans, and interact with the clients through electronic wallet and agent networks. The financial institutions allocate scores to customers to decide whether to grant credit or not, run the customers' accounts, offer the capital used for lending, and take the responsibility for high-risk lending (Hwang and Tellez, 2016). As mentioned earlier this type of digital credit service has shown rapid growth and therefore more and more private companies entered the digital credit industry for profit-seeking activities.

A new type of digital credit model involving third-party, FinTech companies, later emerged in Kenya (Hwang and Tellez, 2016), leading to "FinTech loans (FTL)". This

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[39] https://voxeu.org/article/impact-digital-credit-low-income-countries

model is not based on the banking system. FinTech companies supply the financial product themselves, develop a credit scoring system and distribute the services through their own platforms, without a partnership with banks and financial institutions (Francis et al., 2017). Tala and Branch are digital credit products representing the FinTech-based model in Kenya (MicroSave Consulting, 2019). Table 2 provides a brief description of the difference between MBL and FTL.

Table 2. Description of various types of digital credit in Kenya

	Product	Start Year	Providers	Head Office	Loan Size	Fee	Maturity	Platform
Bank-based (MBL)	M-Shwari	2012	- Safaricom (MNO) - Commercial Bank of Kenya	Kenya	Ksh 100 – 100,000	7.50%	1 month	Sim toolkit
	KCB M-Pesa	2015	- Safaricom - Commercial Bank of Kenya	Kenya	Ksh 50 – 1,000,000	3.66%	1 month	Sim toolkit
	Equitel Eazzy loan	2015	Equity Bank Group (financial institutions)	Kenya	Up to Ksh 3,000,000	3.66%	1 month	Sim toolkit
Fintech based (MAL)	Tala	2014	Tala (Fintech company invested in by PayPal)	United States	Ksh 500 – 50,000	15.00%	1 month	Android App
	Branch	2015	Branch (Fintech company invested in by VISA)	United States	Ksh 270 – 70,000	1.00-14.00%	1 month	Android App

Source: Greenacre (2020); Microsave Consulting (2019)

The characteristics of digital services are quite different depending on the types of suppliers. Firstly, the MBL provided by a bank-based model is controlled through regulation by the Central Bank of Kenya (CBK), while fintech companies are not regulated by CBK (Greenacre, 2020). FinTech companies hereby operate their businesses in a freer environment than the lenders operating within the bank-based model. However, if looking at this another way, the loan suppliers more easily distribute the services, but the customers are more difficult to legally protect.

Also, the two types of digital credit services are operated in different systems and with different devices. MBLs are basically operated through feature phones, meaning that people do not need to own a smartphone to access this loan service. The process of accessing MBLs is based on the SMS protocol, not requiring the 3G network. On the other hand, FTL services basically require a smartphone (Francis et al., 2017; Microsave Consulting, 2019). The providers ask the borrower to install an app and to provide the borrower's social media accounts (Blumenstock, 2018; Francis et al., 2017). The application monitors mobile phone and mobile money usage as well as social media usage. For example, Tala Kenya asks their users for full permission for GPS, SMS, photo/media/files, camara, device ID, and call information, when the users install their application[40]. Through this process they can collect data about the borrower's payroll, bank balance, savings, and even their educational level from social networking information. From this data, they can predict a user's capacity to repay the loan, and then finally determine the creditworthiness of the borrower.

Lastly, the interest rates of MBLs are less than those of FTLs (Francis et al., 2017). MBLs have a higher interest rate than other formal loan services, but the interest rates of FTLs are well above those of MBLs. The cost of a FTL with monthly rates is generally around 15 percent (table 2) (MicroSave Consulting, 2017), a rate equivalent to 180 percent when annualised[41]. This is an interest rate that is hard to find in general lending services. However, digital credit has gained steady popularity in Kenya despite such high interest rates.

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[40] https://tala.co.ke/app-privacy-notice/

[41] https://www.bloomberg.com/news/features/2020-02-12/tech-startups-are-flooding-kenya-with-apps-offering-high-interest-loans

2.2.3 Concern about financial exclusion from digital financial services

The high popularity and growth of digital credit are linked to the expectation that digital credit would be helpful for financial inclusion like other digital financial services, such as digital remittances and transactions which were introduced earlier in 2007. However, even the impact of digital remittance or transaction services on financial inclusion is mixed. Several publications demonstrate that digital remittance and transaction services can expand low-income groups' access to financial inclusion in emerging nations (Hinson, 2011; Maurer, 2012). These services have assisted in overcoming infrastructure limitations and enhancing financial inclusion (Allen et al., 2014; Hinson, 2011; Maurer, 2012). In contrast, Evans and Pirchio (2014) assert that the majority of attempts to increase the use of digital financial services for enhancing financial inclusion in LMICs have failed, with the exception of a few instances in Pakistan, the Philippines, and Kenya. Mishra and Bisht (2013) also found that only eight of the 22 nations that sought to adopt digital financial services were able to build a viable digital financial industry that has taken root and expanded fast; three countries exhibited slow and restricted growth, and in the remaining eight countries the digital financial industry failed to grow.

Critics of the impact of digital financial services on financial inclusion argue that there are still many vulnerable groups which have been easily excluded from digital financial services (Kim et al., 2018). Van Hove and Dubus (2019) performed a study to assess the effects of digital finance on households, as well as whether socio-demographic characteristics contribute to positive or negative impacts of digital finance. The study indicates that the uneducated, the poor, and women have not reaped the benefits of digital money. Furthermore, the rural population, who are a considerably larger group than the urban population in emerging nations, has been excluded from the benefits of digital money.

Many studies (Alafeef et al., 2012; Ammar and Ahmed, 2016) contend that a lack of income prevents people from accessing digital financial services. Unstable and insecure work are linked to the limited access to digital financial services (Johnson

and Arnold, 2012). People who are insecurely employed are usually excluded from formal financial services, and they do not feel the need to use digital financial services, since they usually cannot expect a steady income stream to facilitate repayment.

Insufficient education is one of the key impediments to the spread of financial services in LMICs (Alafeef et al., 2012; Ammar and Ahmed, 2016; Johnson and Arnold, 2012). Not just illiteracy, but also financial illiteracy is a major barrier to financial inclusion. Berger and Nakata (2013) insist that people in LMICs are typically excluded from formal financial services, due to a lack of financial education programmes to educate them. Although the process of accessing digital financial services is relatively simple and understandable, it appears to require technological knowledge and skills. Illiteracy limits people's ability to use this service, and potential user must at the very least understand how to use a mobile phone and applications.

In terms of gender, it is debatable if gender limits women's involvement with digital financial services, as is the case with other formal financial services. According to some research, gender discrimination leads to inequitable financial behaviour, which inhibits or forbids women from accessing both informal and formal financial services, and even digital financial services (Alafeef et al., 2012; Ammar and Ahmed, 2016; Johnson and Arnold, 2012; Potnis, 2014). However, according to Johnson and Arnold (2012), digital financial services rather provide women with better access to credit than earlier conventional banking services because the registration procedure is easier and does not require complicated documentation.

Regarding rural residents, in order to lower total costs and increase financial returns, service providers may elect not to deploy infrastructure in some rural locations (Chick et al., 2010). However, some papers insist that digital financial services contribute to improving financial inclusion levels in rural areas (Batista and Vicente, 2013; Kikulwe, 2014; Munyegera and Matsumoto, 2016). According to the

study by Munyegera and Matsumoto (2016), the availability of digital financial services in rural areas in Uganda has a positive and substantial influence on household well-being, as assessed by real per capita spending. They argue this positive effect is caused by the ease of digital remittances.

Research on the financial inclusion effects of digital financial services of remittances and transactions is therefore available and shows mixed results. However, it is difficult to find studies on how much digital credit is used by financially underserved populations. Therefore, this study aims to assess whether digital credit has been widely used by people who have been considered financially vulnerable, or what characteristics of the vulnerable people have influenced access to digital credit.

2.3 Conceptual framework

To examine the impact of digital credit at the household level, a theoretical grounding is needed to guide appropriate evaluation that examines the development pathway of digital credit services. Therefore, based on combining three different theories of change, I develop the conceptual framework for this study focusing on the digital credit industry. Figure 8 below is the newly designed and finalised framework, derived from the work of Duvendack and Mader (2020), Heeks and Mola (2009), and Kim et al. (2018). It illustrates the different elements of digital credit development, including supply elements, demand elements, and the influences of socio-demographic and economic factors, and regulations and policies that have affected the development pathway. The approach is useful for guiding practice and developing knowledge about what types of impacts occur when digital credit is used.

Figure 8. Theory of change for digital credit
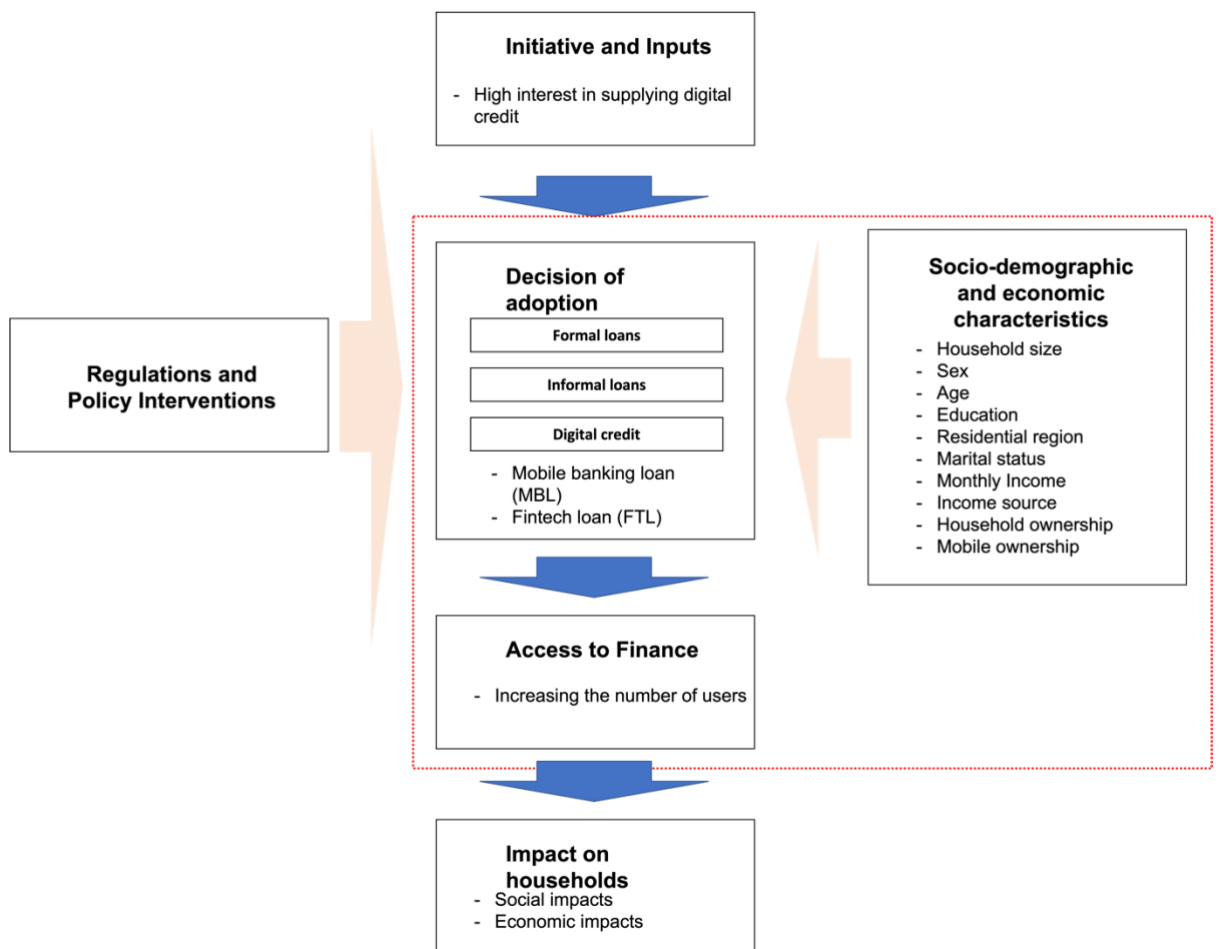
Source: Author's own elaboration

As outlined in figure 8, "Initiatives and Inputs" are essential elements in supplying digital credit services. In order to provide digital credit services to potential borrowers, it requires sufficient resources like capital and infrastructure, technologies for operating digital credit services, and motivation to supply the products by suppliers (Duvendack and Mader, 2020; Heeks and Molla, 2009). With sufficient initiatives and inputs, loan services could be supplied by various lenders. The loan services supplied in Kenya could be divided into two categories according to the criterion — whether the service is legally regulated or not — and whether it is a formal loan or informal loan service. Formal loans are in the formal financial market regulated by CBK, but there are other types of financial services that are not

available in official financial markets, which are called informal loans. The suppliers of informal loan services are not subject to regulation. Therefore, it is difficult for consumers to be legally protected in this informal financial market. Digital credit is also divided into two different services according to the lenders. One is MBL supplied by commercial banks regarded as a formal loan service, and another is FTL by FinTech companies, considered one of the informal loan services, as described in chapter 2.2.

Returning to figure 8 above, given the supply of digital credit services, households can make a "Decision of Adoption" to decide whether they use a loan service or not and which types of loan services would fit with their preferences. Households have options to choose one or multiple loan services from formal and informal loan sources, including digital credit. Also, they may have to make a choice not to borrow due to their preferences and their demographic and economic constraints.

When a borrower chooses to adopt a loan service, the external factors should be considered, which are likely to influence the whole development pathway of digital credit. It is important to understand and confirm the effects of the external factors, as socio-demographic and economic factors and financial regulations enormously affect the possibilities of adopting certain loan services by households (Kim et al., 2018). Regulation is a factor influencing whether the digital credit industry will flourish or decline. Some studies contend that strict regulations must be retained to mitigate potential risks and protect the security and stability of the financial system (Makulilo, 2015; Vlcek, 2011), but Evans and Pirchio (2014) and Sanz and De Lima (2013) also conclude that too many restrictions lead to a rigid business environment. The growth of access to digital credit is therefore likely to depend on the level of regulation.

Above all, socio-demographic and economic factors are important in the development pathway of digital credit, which is the main theme of this chapter. Socio-demographic and economic factors indicate the characteristics of households such as age, sex, education, residential place, monthly income, and the amount of

household assets such as ownership of a house or mobile phone (see figure 8). Understanding the influence of socio-demographic and economic household characteristics on adoption of a loan and loan choice is significantly important. For example, people who are women, low-educated, low-paid, or temporary workers are less likely to use financial services, including even digital financial services (Alafeef et al., 2012; Ammar et al, 2016; Johnson et al., 2012; Potnis, 2014). Or they may decide to use informal loan services instead of using formal loans or digital credit services. Depending on borrowers' socio-demographic and economic characteristics, adoption of loans will vary, and this could influence the level of financial inclusion. After making a decision to take a loan service, households then "Access [to] Finance." In the framework, "Impact on households" then needs to be considered, which includes social and economic impacts.

A grey area of the development pathway of digital credit still remains, but this study focuses on how much the socio-demographic and economic characteristics of vulnerable classes have affected decisions about digital credit uptake and use, which is a gap in knowledge not addressed by the existing literature. This will enable us to understand financially excluded populations' access to digital credit services compared to other loan services.

2.4   Data and methodology

2.4.1   Data sources

This research uses secondary data sourced from the FinAccess Household Survey 2019, conducted by Financial Sector Deepening Kenya, Central Bank of Kenya, Consultative Group to Assist the Poor, and Kenya National Bureau of Statistics[42]. The FinAccess survey is designed to measure and track access to financial services in Kenya's population on the demand side. The data from this survey includes a

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[42] https://finaccess.knbs.or.ke/reports-and-datasets

wide range of information covering not only household economic activity and financial service utilisation, but also household demographic characteristics. It targeted individuals aged 16 years and above, from a representative sample of households, designed to provide estimates at the national and regional level and by residence (rural and urban areas), including 8,669 households across Kenya. With the data from the FinAccess Household Survey, I adopted a multinomial logit model to examine the hypothesis of this study.

2.4.2   Multinomial logistic regression

This study uses a multinomial logit regression in order to understand how much socio-demographic and economic features of vulnerable households have influenced the decision of using digital credit services. Multinomial logit regression is a classification method that generalises logistic regression multiclass problems, with three or more discrete results (Greene, 2012). It is generally used to predict the probabilities of several possible outcomes of categorically dispersed dependent variables (Cameron and Trivedi, 2005; Gujarati, 2003). This approach frames logit models for the response variable to compare each categorical level with a reference category. In this study, the choice of not using loan services is used as the reference category for comparison with using various types of loan services: 1) MBL; 2) FTL; 3) other formal loan, and; 4) other informal loan. In sum, it is suggested that various socio-demographic and economic sets of independent variables or regressors would correlate the loan choices made by Kenyan households.

The loan choice, denoted by Y, is the dependent variable, whereas socio-demographic and economic variables were the independent variables denoted by $X_{i1}, X_{i2},., X_{ip}$ where i denotes the observation of a household and p denotes the number of independent variables. It is assumed that $Y_i = (Y_{i1}, Y_{i2}, ..., Y_{ir})^T$ has a multinomial distribution with index, $n_i = \sum_{j=1}^{r} Y_{ij}$ and parameter $(\Pi_{i1}, \Pi_{i2}, ..., \Pi_{ir)})^T$. R indicates response categories of dependent variables, the number of loan choices.

When the response categories $1,2,\ldots r$ are unordered, Π_i is related to independent variables through a set of r-1 baseline category logits. Taking j^* as the baseline category, the model is written as

$$\ln\left(\frac{\Pi_{ij}}{\Pi_{ij^*}}\right) = X_i^T\beta_j + e_{ij}, \qquad j \neq j^* \qquad (1)$$

Where X_i^T is a transpose of independent variable vector X_i; and β_j is a vector for jth level of the response variable; and e_{ij} is a random error term. Four generalised logits are defined from this analysis, since the five categories of the response variable in this analysis had no inherent ordering. Π_{ij} can be calculated from β as

$$\Pi_{ij} = \frac{\exp(X_i^T\beta_j)}{1 + \sum_{k \neq j^*}\exp(X_i^T\beta_k)} \qquad (2)$$

The probability of Π_{ij} equals the probability of loan choice of j. The kth element of β_j can be regarded as the increase in log-odds of falling into category j versus category j^* resulting from a one-unit increase in the kth independent variable, holding the other independent variables constant. The details of a vector of independent variables X_i are explained in appendix 2. This model allows the study to examine the hypothesis of whether the socio-demographic and economic characteristics of households that have been excluded from financial services have the association with loan choices, especially digital credit.

2.5 Results

2.5.1   Descriptive summary

Before going into in-depth analysis, the study first describes the current use of digital credit services by Kenyan households: how many Kenyan households are using digital credit services, and how often they have used them. According to the data in table 3, it is clear that a large number of respondents are currently using both digital credit services, MBL, and FTL services. Table 3 shows that digital credit

services are the third and fourth most used loan service after loans from friends/ neighbours and Chama[43]. The data also show that 25.0 percent of all borrowers have used MBLs, and 21.7 percent have used FTLs. This means that digital credit has become one of the most popular loan services for consumers in a short period of time since its launch in 2012, more used than the other formal loan services from banks and microfinance institutions. However, it is not clear exactly whether the increase in the use of digital credit is an influx of people who had previously have excluded from loan services, or a diversification of loan portfolios by those who had already used loan services.

Table 3. The current borrowers of formal and informal loan services in Kenya

	(1) **			(2) **		
	Current borrowers*	Percentage (%; total borrowers)	Percentage (%; respondents)	Current borrowers	Percentage (%; total borrowers)	Percentage (%; respondents)
MBL	643	25.0	7.4	643	25.0	7.4
FTL	559	21.7	6.5	559	21.7	6.5
Bank	259	10.1	3.0			
SACCO	326	12.7	3.8			
Microfinance	72	2.8	0.8			
Government	89	3.5	1.0			
Informal lender	39	1.5	0.5			
Chama	665	25.8	7.7			
Employer	90	3.5	1.0			
Friend/ neighbour	790	30.7	9.1			
Shopkeeper	158	6.1	1.8			
Buyer	74	2.9	0.9			
Formal loan				1,139	44.2	13.1
Informal loan				1,909	74.1	22.0

  Source: FHS 2019

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[43] Chama (Swahili:, "come together") refers to locally organized groups that meet regularly. Typically, members contribute money to the group, which is then distributed among members (Chidziwisano et al., 2020).

Current borrowers indicate the number of borrowers who answered they are currently using a particular loan. In the survey, respondents could tick/check multiple loan services that they were currently using (if a household respondent was using various loan services sourced from mobile banking, SACCO, and buyer, they ticked three multiple choices).

Model (1) shows the comparison between each loan service, and model (2) represents the comparison between digital credit service, formal and informal loan.

In addition, digital credit borrowers more frequently used loan services than other loan service borrowers (table 4). The data in table 4 describe how often a household used a particular loan service in the previous 12 months — the frequency of using loan services. The data relevant to digital credit services show surprising figures. The borrowers of MBL used the services 3.24 times a year on average, while borrowers using other formal loan services, including banks, SACCO, microfinance, and government, only used these services 1.25 times on average. What is more surprising is the average frequency of borrowing from FTL. FTL borrowers were found to have used FTL 26.8 times in the previous 12 months. This is considerably higher than any other borrowing source frequency, even the average frequency of 2.5 for people using an informal loan.

The reason why borrowers use digital credit services more frequently seems to be primarily because of the characteristics of digital credit which is simpler and easier to use (Chen and Mazer, 2016). The borrowers can access digital credit services in a very concise manner at a speedy pace. However, is it conducive for the household economy to take out loans several times? According to the data, a household using an FTL has used such a loan more than 2 times per month. It indicates "a borrowing binge." Frequent or excessive borrowing could result in late repayments and even worse, default (Mensah et al., 2013).

Table 4. The size and frequency of loan services

	(1) **		(2) **	
	Loan frequency*	Borrowed amount (Ksh)	Loan frequency*	Borrowed amount (Ksh)
MBL	3.24	6,245	3.24	6,245
FTL	26.79	1,836	26.79	1,836
Bank	1.16	660,987		
SACCO	1.24	183,867		
Microfinance	1.54	110,882		
Government	1.34	96,066		
Informal lender	2.29	24,610		
Chama	1.96	16,424		
Employer	2.18	38,810		
Friend/ neighbour	2.74	5,937		
Shopkeeper	3.42	2,604		
Buyer	-	3,738		
Formal loan***			1.25	330,239
Informal loan****			2.50	12,221
Total (Average)	5.97	70,846	5.97	70,846

Source: FHS (2019)

* Loan Frequency indicates how often a household has used a particular loan service in the past 12 months.

** Model (1) shows the comparison between each loan service, and model (2) represents the comparison between digital credit service, formal and informal loan.

*** Formal loan covers whole formal loan services except MBL, bank, SACCO, microfinance, and government sources.

**** Informal loan covers whole informal loan services except MBL, informal money lender, Chama, employer, family/ friend/ neighbour, shopkeeper, buyer.

Despite these two important findings about digital credit use – the increasing number of households using digital credit, and the high frequency of using digital credit – these descriptive data are insufficient evidence to prove the expansion of financial inclusion. Therefore, this study identifies whether digital credit is adopted by vulnerable populations that were previously outside of the financial industry, drawing on the results of a multinomial logit regression.

The descriptive summary in the table below (table 5) shows households' profiles according to dependent variables and independent variables in the multinomial

logit regression model. In relation to sex of the borrower, the results show that 55.1 percent of the borrowers of all formal loan services were men, which is the opposite result to the gender ratio of non-borrowers. It could be inferred that formal loan services are not yet female-friendly services. In terms of age, the number of young people (18-24 years) and older people (over 64 years) using loan services as a proportion of all respondents is quite small, while the populations aged from 25 to 54 account for the largest percentage. Interestingly, the age group from 15 to 24 is less likely to use loan services, but FTL is the exceptional case. According to the table, 25.8 percent of FTL borrowers are from this youngest age group (15-24 years old), while the young borrowers of the other loan services account for less than 10 percent. It shows that FTL is probably more user-friendly for the young generation since it is based on a high-technology service.

In terms of education, the borrowers of all types of loan services seems to be more educated than non-borrowers. 18.9 percent of non-borrowers said they had not received any education. However, for those who used loan services, only 0.6 percent of MBL, 2.8 percent of FTL, 2.4 percent of formal loan, and 9.8 percent of informal loan said that they had never been educated. It shows that the level of education of borrowers is higher than that of non-borrowers.

The area where the respondents live also shows a big difference between non-borrowers and borrowers. 61.5 percent of non-borrowers resided in a rural area, while more than half of borrowers except informal loan borrowers lived in an urban area. Notably, in the case of MBL and FTL borrowers, 33.1 percent and 45.6 percent respectively live in a rural area. This result shows that the borrowers are more likely to be urban residents than living in rural area.

Table 5. Socio-demographic characteristics of non-borrowers and borrowers

	None		MBL		FTL		Formal loan		Informal loan	
	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency
Sex										
Male	41.1	2,511	56.2	195	45.2	128	55.1	348	37.1	481
Female	58.9	3,600	43.8	152	54.8	155	44.9	284	62.9	815
Total	100.0	6,111	100.0	347	100.0	283	100.0	632	100.0	1,296
Age										
15-24 years	22.8	1,399	14.4	50	25.8	73	10.1	64	15.1	196
25-39 years	34.6	2,109	58.8	204	44.9	127	39.6	250	44.8	581
40-54 years	20.6	1,256	19.0	66	20.1	57	32.8	207	23.5	304
55-64 years	9.1	556	4.9	17	6.7	19	10.4	66	9.4	122
65 years +	12.9	791	2.9	10	2.5	7	7.1	45	7.2	93
Total	100.0	6,111	100.0	347	100.0	283	100.0	632	100.0	1,296
Education										
None	18.9	1,153	0.6	2	2.8	8	2.4	15	9.8	127
Primary	44.6	2,721	25.4	88	42.4	120	25.4	160	49.2	637
Secondary	28.1	1,713	45.2	157	36.8	104	31.3	197	31.7	411
Tertiary	8.4	512	28.8	100	18.0	51	40.9	258	9.3	120
Total	100.0	6,099	100.0	347	100.0	283	100.0	630	100.0	1,295
Region										
Rural	61.5	3,756	33.1	115	45.6	129	49.8	315	57.3	743
Urban	38.5	2,355	66.9	232	54.4	154	50.2	317	42.7	553
Total	100.0	6,111	100.0	347	100.0	283	100.0	632	100.0	1,296
Marital status										
Single	26.1	1,594	28.0	97	33.0	93	19.3	122	21.2	274
Married	55.8	3,410	64.5	223	58.2	164	69.4	438	63.0	815
Divorced	6.1	369	4.1	14	5.7	16	4.1	26	5.9	77
Widowed	12.0	734	3.5	12	3.1	9	7.2	45	9.9	128
Total	100.0	6,107	100.0	346	10.0	282	100.0	631	100.0	1,294

Source: FHS (2019)

In terms of income, as seen in table 6, a considerable difference between formal loan and informal loan users exists. 50.9 percent of MBL borrowers and 61.5 percent of other formal loan borrowers belong to the highest income group. However, only 28 percent of FTL borrowers and 21.7 percent of other informal loan borrowers are in the highest income group. This means that people who use FTLs and informal loans are more likely to receive lower wages than those who use MBL and formal loans. Another thing to note is that a high percentage of formal loan and MBL borrowers receive a steady salary as employees, while informal loan borrowers and FTL

borrowers are more likely to be casual (temporary/daily) workers. Among FTL users, 30.7 percent are casual workers, and 20.5 percent rely on NGOs or other people's support. Among those who use other informal loan services, 15.9 percent live by someone's support, but this is less than that of FTL users. This means that people who do not have a regular or stable income could more easily access FTL than informal loans. In terms of farming, borrowers of both types of digital credit (MBL and FTL) are less inclined to earn income through farming. 23.4 percent of formal loan borrowers earn income through farming, while only 13.8 percent of MBL borrowers and 9.9 percent of FTL borrowers make money from farming.

Table 6. Economic characteristics of borrowers and non-borrowers

	None		MBL		FTL		Formal loan		Informal loan	
	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency
Monthly income										
Ksh 0-2250	29.3	1,734	7.7	26	20.7	57	6.2	38	24.8	317
Ksh 2251-5000	30.4	1,796	17.1	58	22.2	61	14.0	86	26.7	341
Ksh 5001-10000	23.0	1,359	24.3	82	29.1	80	18.3	113	26.8	343
Ksh 10001-	17.3	1,022	50.9	172	28.0	77	61.5	378	21.7	277
Total	100.0	5,911	100.0	338	100.0	275	100.0	615	100.0	1,278
Income source										
Farming	28.2	1,722	13.8	48	9.9	28	23.4	148	26.0	337
Employed	7.3	449	21.3	74	16.6	47	38.3	242	11.5	149
Casual worker	24.2	1,480	21.3	74	30.7	87	6.3	40	25.2	327
Business	13.3	813	32.6	113	20.9	59	22.0	139	19.9	258
Supported	24.2	1,477	9.2	32	20.5	58	7.6	48	15.9	206
Others	2.8	170	1.8	6	1.4	4	2.4	15	1.5	19
Total	100.0	6,111	100.0	347	100.0	283	100.0	632	100.0	1,296

Source: FHS (2019)

2.5.2   The results of the regression model

Table 7 shows how much socio-demographic and economic factors are correlated to the decision to use loan services, and the choice of not to use loan services is used as the reference category in this table for comparison with the use of various types of loan services. Appendices 2 and 3 show the results of the multinomial logistic

regression analyses respectively when the choice of "MBL" or "FTL" is the reference group. These appendices show how much the borrowers of MBL and FTL services have different characteristics as reference groups. In table 7, model 0 shows the relation between the independent variables (socio-demographic and economic factors), and the dependent variable of the possibility not to use loan; model 1 is for using MBL; model 2 is for using FTL; model 3 is for using formal loans; and model 4 is for using informal loans.

According to table 7, digital credit seems to be adopted by certain groups who have previously been excluded from formal financial services to some extent: the rural population, women, lower income groups, and lower-educated individuals. First, I examine the results for the rural population. The results show that no link exists between the region/area where a household lives and the use of digital credit ($p > 0.1$). It means that the use of both MBL and FTL digital credit services is not associated with the residential place the borrowers live in. This can be said to be a meaningful result. People living in rural areas have often struggled to use loan services, because they have little chance to access financial services due to physical limitations such as lack of financial infrastructure (Chick et al., 2010). However, it does not matter where people live because digital credit services allow rural people to use financial services anytime, and anywhere. Therefore, the region variable does not seem to have a meaningful effect on access to both types of digital credit services, which is a similar result for other digital financial services (Batista and Vicente, 2013; Kikulwe, 2014; Munyegera and Matsumoto, 2016).

Table 7. Multinomial logit regression: determinants of the use of loans

VARIABLES	(0) None*	(1) Mobile Banking	(2) Mobile App-based	(3) Other formal loan	(4) Other informal loan
Household size		-0.056**	-0.126***	-0.088***	-0.033**
		(0.0328)	(0.0348)	(0.0255)	(0.0158)
Sex					
(Male)					
Sex		-0.288**	0.016	-0.167*	0.255***
(Female)		(0.1247)	(0.1338)	(0.0998)	(0.0693)
Age					
(18-24 years)					
Age		0.563***	-0.058	0.242	0.426***
(25-39 years)		(0.1902)	(0.1815)	(0.1738)	(0.1071)
Age		0.126	-0.155	0.676***	0.339***
(40-54 years)		(0.2312)	(0.2226)	(0.1895)	(0.1218)
Age		-0.124	-0.136	0.661***	0.344**
(55-64 years)		(0.3286)	(0.2995)	(0.2275)	(0.1491)
Age		-0.095	-1.138**	0.491*	-0.037
(65 years and over)		(0.4025)	(0.4699)	(0.2598)	(0.1667)
Education					
(None)					
Education		2.242***	1.180***	1.290***	0.593***
(Primary)		(0.7203)	(0.3749)	(0.2879)	(0.1099)
Education		3.074***	1.277***	1.778***	0.652***
(Secondary)		(0.7195)	(0.3829)	(0.2926)	(0.1212)
Education		3.337***	1.469***	2.635***	0.460***
(Tertiary)		(0.7269)	(0.4067)	(0.2998)	(0.1574)
Region					
(Rural)					
Region		0.207	0.037	-0.310***	0.029
(Urban)		(0.1473)	(0.1514)	(0.1140)	(0.0764)
Marital status					
(Single)					
Marital status		0.077	0.018	0.301**	0.128
(Married)		(0.1546)	(0.1654)	(0.1390)	(0.0932)
Marital status		-0.194	-0.218	-0.003	-0.027
(Divorced)		(0.3140)	(0.3089)	(0.2631)	(0.1549)
Marital status		0.054	-0.672	0.397	0.054
(Widowed)		(0.3534)	(0.3953)	(0.2332)	(0.1473)
Income					
(Ksh 0-2250)					
Income		0.318	-0.211	0.446**	-0.172*
(Ksh 2251-5000)		(0.2444)	(0.1954)	(0.2031)	(0.0891)
Income		0.517**	0.091	0.693***	-0.007
(Ksh 5001-10000)		(0.2390)	(0.1928)	(0.2005)	(0.0933)
Income		1.027***	0.065	1.472***	-0.055
(Ksh 10001-)		(0.2368)	(0.2154)	(0.1953)	(0.1076)

Income source					
(Farming)					
Income source		0.120	**1.194***	**0.813***	**0.417***
(Employed)		(0.2276)	(0.2719)	(0.1529)	(0.1306)
Income source		0.074	**0.991***	**-0.968***	0.091
(Casual worker)		(0.2094)	(0.2334)	(0.1957)	(0.0927)
Income source		**0.588***	**1.027***	0.280	**0.348***
(Own business)		(0.2017)	(0.2497)	(0.1485)	(0.1030)
Income source		-0.141	**1.011***	-0.262	-0.078
(Supported)		(0.2594)	(0.2557)	(0.1931)	(0.1077)
Income source		0.277	0.732	-0.402	-0.008
(Rent/ pension)		(0.5697)	(0.7663)	(0.4429)	(0.3772)
Income source		-0.691	0.309	0.169	-0.386
(Others)		(0.7541)	(0.7540)	(0.4205)	(0.3605)
House ownership					
(No)					
House ownership		-0.185	**0.336**	0.174	**0.183**
(Yes)		(0.1562)	(0.1636)	(0.1284)	(0.0861)
Mobile ownership					
(No)					
Mobile ownership		**3.567***	**1.734***	**1.694***	**0.494***
(Yes)		(1.0067)	(0.3110)	(0.3172)	(0.0955)
Constant		**-9.554***	**-6.145***	**-6.463***	**-2.997***
		(1.2623)	(0.5632)	(0.4752)	(0.2005)
Observations	8,393	8,393	8,393	8,393	8,393

* "None" is the reference category to compare with other loan services.
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

Second, in terms of sex, formal loan services are more likely to be used by men than women compared to non-borrowers (baseline) since the coefficient value of sex on the use of formal loan is (-)0.167 which is statistically significant at 10%. Informal loan services, however, are more used by women when considering the coefficient value for females relative to males; the sex variable on the use of informal loan is (+)0.255 (p<0.01). There are assumptions by which those results may be explained. Firstly, some could say that informal loan services such as Chama tend to be exclusively designed for women's groups, meaning some informal loan services are more used by women. However, except for this service, few informal services are only designed for women, so this argument has limitations in explaining the above results. The more convincing explanation is that women are being excluded from the formal loan market, so they have no choice other than to use informal loan

services. Many studies claim that gender inequalities or discrimination can lead to differences in financial behaviour and access, and it has critically limited the access of women to formal financial services (Alafeef et al., 2012; Ammar et al., 2016; Johnson et al., 2012; Potnis, 2014). Likewise, in terms of MBL, the coefficient value of females relative to males is 0.288 units less for preferring the use of MBL($p<0.05$) compared to non-borrowers (baseline), given all other predictor variables in the model are held constant. In other words, females are less likely to use MBL services than males, as is the case with other formal loan services. In contrast, FTL borrowers are not significantly correlated to sex ($p > 0.1$), meaning that sex does not have the connection with the use of FTL services. It shows that MBL and other formal credit services have been less utilised by females, while FTL has been used by people regardless of gender.

Third, income level also does not seem to have a significant effect on the use of FTLs, but the use of MBLs was positively associated with income level, as was the case for other formal loan services. Looking at the income variables of model 1 and model 3 in table 7, as the income level increases, the likelihood of the use of MBL and formal loans gradually increases. The values of the coefficients in model 1 and 3 show that the more income a household has, the more likely it is to use the MBLs and formal loans. In contrast, informal loan services, and FTL services, are found not to have correlations with the amount of monthly income ($p > 0.1$). The results show that there is no significant effect of income level on the possibility of the use of FTL or informal loan services. To summarise, the poor find it hard to access MBLs and formal loan services, but this is not the case for their access to FTL and informal loans. This is because the lower income group has more possibility to be excluded from the screening of formal loan lenders. The banks and financial institutions refuse to provide loan services if a potential borrower fails to meet a certain level of requirements because banks and financial institutions under the realm of financial regulation could not impose the needed high interest rates to offset the higher risk of lower income borrowers. MBLs are similar to formal loans since they are also provided by banks who are formal institutions (Hwang and Tellez, 2016; Microsave

Consulting, 2019). In comparison, informal lenders do not have to follow the regulations such as interest caps which other formal loan suppliers have to abide by. Also, FTL suppliers can provide the services with a high interest rate, regardless of the regulations, even if a potential borrower has a risky credit rating due to low income. In addition, informal and FTL lenders can fail to screen borrowers, since informal lenders do not submit to or access the credit information system, and there are likely numerous occasions in which those lenders are unaware of the complete borrowing activities of loan applicants, raising the risks of over-indebtedness and default (Agarwal et al., 2019).

Fourth, the level of education is another significant characteristic that is closely related to the use of both MBL and FTL. The results in table 7 show that education has the greatest coefficient value on the access to and uptake of loans compared to other variables. More educated people are more likely to use loan services. In table 7, all educated segments are more likely to use all types of loan services than the reference group, the non-educated population. Looking at the variable of education level in table 7 on every model, the higher the level of education, the higher the probability of using a loan, and this is a common trend for all kinds of loan services. In particular, education affects the use of both digital credit the most among the other socio-demographic and economic variables. Similarly, the use of FTL has more close relation with the degree of education when compared to that of other informal loan services. The impact of education on the use of the FTL, however, is smaller than on the use of formal loans, and also on that of MBL, which is also a digital credit service. The connection of education is even stronger for the use of MBL, when considering coefficient values compared to other loans. This indirectly indicates that the lower the level of education, the more difficult it is to access MBLs than formal loans.

Existing studies also assert that a low level of education could be an obstacle in adopting mobile financial services (Alafeef et al., 2012; Ammar et al., 2016; Dzogbenuku, 2013; Johnson et al., 2012), and the results in table 7 support this

assertion. "Financial illiteracy" is one of the main problems in using loan services, related to the issue of education. In LMICs like Kenya, financial education programmes are usually deficient, and people have usually been excluded from formal financial services, which means people cannot experience or learn about financial services (Berger et al., 2013). Additionally, "digital illiteracy" may be another factor making use of digital credit services more influenced by education level than other loan services. Digital literacy refers to the technical, cognitive, and social skills used to perform tasks and solve problems with a digital device and environments (Ameen and Gorman, 2009; Gilster, 1997; Lenham, 1995; Pool, 1997). According to a number of studies, education level appears to be the most relevant factor connected to differences in learning digital skills (Hargittai, 2002; van Deursen and van Dijk, 2009). If people have been more educated, they have more ability to use a digital device or software programme. Therefore, this could be the reason for explaining why less educated populations find it difficult to access digital credit services.

When it comes to age, the oldest group seems to have limitations in using FTL services. According to the results in table 7, the influence of age on the use of both types of digital credit services is different. For the case of MBL, the coefficient for the age group 25-39 years to the reference age group is (+)0.563 units (p<0.01) , indicating that they are using the services more than the youngest age group of 18-24 years. There are no significant effects on the other age groups (p > 0.1), showing that the young age group who can work actively is using MBL more than the older groups compared to the non-borrowers (baseline). In the case of FTL, the older group has some difficulties in accessing use of FTLs. The coefficient for the oldest group (65 or over) relative to the youngest (18 to 24) is (-) 1.138 units for using FTL services (p < 0.05). The main reason for this result is that FTLs are technology-based services that can be more unfamiliar and more difficult to use for the elderly. Neither use of formal loan nor informal loan showed any meaningful results for the oldest group over 65 years old (see model 3 and 4 in table 7). It showed that FTL is the only loan service which the oldest people are struggling to use, but that in

contrast the younger groups prefer to use digital credit. Formal and informal loans also appear to be influenced by age, but unlike digital credit used mostly by the youngest group, people aged 44 to 64 seem to be the most active in using both formal and informal loans.

Farmers are another group that are not actively using FTL. As seen in the income source variables in table 7, most household income sources do not show any effect on the use of MBL, except for households running their own business (small-sized business owners use MBL more actively). However, for FTL the data show that households earning money from sources other than farming, like a salary or running their own business, are more likely to use FTL. Even, casual workers and those who are supported by NGOs have more likelihood of using FTLs than farmers. It is a surprising fact that FTL has less potential to be used by farmers than by temporary workers or the unemployed supported by NGOs. This means that people with highly unstable jobs could use FTL easily.

2.6   Discussion

I reviewed existing studies and conducted this study to examine how social, demographic and economic factors at the household level are correlated to the use of digital credit services. The analysis examined whether digital credit contributed to the expansion of financial coverage (and inclusion). It analysed whether digital credit was able to provide the same opportunities for the economically excluded population, in addition to the general population, as is expected by advocates. Multinomial logit regression results show that digital credit expanded to some extent financial accessibility for the financially vulnerable population, but not in many areas.

It is notable that the previous limitation of rural residence for financial access does not limit access to both types of digital credit services, MBL and FTL, meaning that people in rural area could use these new financial services like the urban

population. This shifts the conventional conception that people living in rural areas find it difficult to access financial services (Klus et al., 2021).

In the case of FTL, financial access is also relatively less connected with the socio-demographic and economic status of borrowers. Although education level seems to have linkage with the use of both digital credit services to some extent, as with other financial services, the study shows no major links between the use of FTL and the other variables like sex and income level. The results for FTLs show women are no longer discriminated against nor face gender-related barriers in accessing FTLs, and so this finding again shifts the argument that women are excluded from digital financial services (Alafeef et al., 2012; Ammar and Ahmed, 2016; Johnson and Arnold, 2012; Potnis, 2014). Income level also does not show meaningful connection with access to FTL, which contradicts studies claiming income is the main barrier to access finance (Johnson and Arnold, 2012; Nan and Markus, 2018). These findings reveal that with digital credit, females or those on low-incomes, previously considered financially vulnerable groups, could use FTLs without constraints – or at least with no more constraints than other groups.

However, the findings on MBL show that it was relatively less used by vulnerable groups that are typically subjected to financial exclusion. Households having particular socio-demographic and economic constraints tended to use this form of digital credit less, as with formal loans. The populations who are in large families, women, low-educated, low-income, and casual workers are less likely to use MBL. Even worse, the populations who are low-educated and have no mobile device found it even more difficult to access MBL than conventional formal loan services, known to be the most difficult to access. These findings show to some extent that MBL services are comparably less well distributed to vulnerable groups, while FTL services are more accessible financial services for these groups.

We can then consider whether an FTL loan is really a transformative service providing a positive impact to the so-called financially excluded group. Of course, the use of loan services can solve liquidity problems in the event of a disaster or

emergency situation (Bharadwaj et al., 2019; Suri and Jack, 2021). It can also enable households to make preparations and investments for the future more effectively, by providing resources to invest in education or their own small business for example (Vidal and Barbon, 2018). However, it should also be noted that the unregulated suppliers can distribute the loan services without an interest cap (Mitheu, 2018), leading to big financial burdens for their borrowers. FTL has a higher interest rate than other loan services, and even than MBL. The cost of a FTL with monthly rates is generally around 15 percent, a rate equivalent to 180 percent when annualised, and so this credit comes at a high cost (MicroSave Consulting, 2019). Furthermore, the fact that the process of getting the loan services provided by FinTech companies is much easier and more rapid, and lending eligibility is also more relaxed, could cause overborrowing which ultimately could make the economic status of households even worse. The findings demonstrate that the characteristics of the FTL loans provided by FinTech companies have made the vulnerable people borrow much more frequently. According to the descriptive summary above, borrowers have used FTL about 27 times within a year. This could make the borrowers at risk of becoming over-indebted.

The fact that FTL is still difficult for some groups to reach should be considered as well. The findings show that the elderly and farmers were excluded from using FTLs. This phenomenon could be described as a "digital divide" — the term indicates a gap in terms of access to and usage of information and communication technology (Ameen and Gorman, 2009; Gilster, 1997; Lenham, 1995; Pool, 1997). FTL transactions are made on a smartphone, and in order to use them, the customers need to download and run an application from the app store, which is a burdensome task for those not familiar with digital devices. Therefore, the older population and farmers, who lack the knowledge to use technological devices like a mobile phone, sometimes may have difficulties in using digital credit. To expand the inclusiveness of digital credit, measures to alleviate the problem of the digital divide should be considered.

2.7 Conclusion

Digital credit has rapidly grown in Kenya in a short period of time thanks to its unique features —an instant, automated, remotely accessible, and easy to use financial product (Chen & Mazer, 2016). This success has led people to hope that digital credit can give new opportunities to vulnerable people previously excluded from conventional loan services (Björkegren & Grissen, 2018; Aron & Muellbauer, 2019; Bharadwaj et al., 2020). This study examined whether Kenya's digital credit services, MBLs and FTLs, provided the opportunities to the population excluded from loan services. The study found that digital credit services do not show the same results on the level of financial inclusion as expected. MBL has not been universally used by vulnerable groups, just like with formal loan services. On the other hand, FTL credit services have been accessed and offered to women and unstable income groups who were considered vulnerable, although those with lower education levels still had more limited access.

Can we then conclude that the vulnerable group's quality of life has been improved simply by achieving financial engagement with FTL services? It is time to ask whether financial inclusion is an indispensable condition for improving quality of life and for households' economic development. Financial inclusion by digital credit services clearly has a clear advantage in that they can provide the economic opportunities for those who have not previously experienced financial services. Securing liquidity in funds can provide money to those who have nothing to eat right now or open a new horizon in education for those who have not gained an educational opportunity. However, offering loans to consumers who cannot afford to repay may have worse consequences.

Judging from the current situation, it is still premature to conclude whether digital credit ultimately provides a positive impact to households. Therefore, further research is required to examine whether digital credit has generated more positive

impacts via "financial inclusion" than negative impacts via creating "a vicious circle of debt and poverty under an unregulated credit environment".

3. What Causes Borrowers to Default? Focusing on Digital Credit in Kenya

Abstract

Digital credit, a type of mobile loan, has grown in Kenya after the great success of mobile money services. It was expected to boost financial inclusion by increasing loan access to vulnerable populations. However, contrary to some expectations, a large number of digital credit borrowers in Kenya have been struggling with repayment and some of them have even defaulted. It could be easily believed that digital credit borrowers themselves, many of whom are vulnerable people, and previously excluded from loan services due to their low capacity to repay, would be the main reason for the high default rate. Yet, there is limited evidence identifying the causes of high default rates for digital credit. Therefore, the study focuses on what factors are closely related to the likelihood of high defaults by digital credit.

To find out the main causes of high default rates for digital credit in Kenya, the study used mixed methods, combining quantitative data and OLS regression analysis with qualitative semi-structured interview data derived from interviews with digital credit borrowers. The mixed methods approach found that the use of digital credit services itself has a stronger correlation with the likelihood of defaults the most, than other factors like customers' economic and demographic characteristics, such as income and gender. The identified reasons why the use of digital credit itself is associated with higher default rates are the characteristics of digital credit: high interest rates, short repayment periods, and an inducement of frequent borrowing. Those features have made the borrowers more difficult to repay digital credit.

3.1 Introduction

Digital credit, a type of loan service operated through a mobile device, has dramatically gained popularity in Kenya after the proliferation of mobile money services (Hwang and Tellez, 2016). In Kenya in 2017, over a third, around 34.8 percent of Kenya's adult population, had used digital credit (Gubbins and Totolo, 2018). This is a remarkable figure in five years since its first introduction in 2012. The growth of digital credit increased expectations of a boost in financial inclusion, through increasing access of lending services to financially vulnerable populations. It enables customers to access loan services at any time and from any location, which would also contribute to economic growth by allowing borrowers to utilise loan services for investing in their business or easing individual liquidity problems (Durai and Stella, 2019; Hwang and Tellez, 2016; Kaffenberger and Totolo, 2018).

However, the negative aspects of credit – and in this case digital credit within Kenyan society – have been raised by experts. The experts (Wright, 2017) raised concerns about over-indebtedness in Kenya. The level of individual over-indebtedness in Kenya is now approaching a crisis level (Bateman et al., 2019), therefore the Kenyan government should take urgent measures in order to control and stabilize the digital credit industry (Wright, 2017). The Kenyan digital credit industry, which was previously nicknamed "Silicon Savannah" due to the rapid growth of FinTech businesses, is now facing a persistent debt crisis (Donovan and Park, 2019). Moreover, Kenyan digital credit borrowers have been struggling more with repayments and some of them have even defaulted. According to a survey conducted in 2018 (Kaffenberger et al., 2018), about 50 percent of digital borrowers in Kenya said that they had not met their repayment dates or deadlines on their loans from digital credit, and about 12 percent have defaulted on digital credit loans. These are relatively high default and late repayment rates in comparison to traditional financial lending services such as banks[44]. These problems have become

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[44] Average default rate for Kenyan commercial banks was reported 8.9% in same year of 2018 (Central Bank of Kenya, 2019)

even worse since the COVID 19 pandemic. After the pandemic, the proportion of households unable to repay loans soared, but the highest level of repayment problems across various loan types was found among digital credit borrowers. The findings of the FinAccess Household Survey 2021[45] by the Central Bank of Kenya (CBK), Financial Sector Deepening of Kenya (FSD Kenya) and the Kenya National Bureau of Statistics (KNBS) show that 50.9 percent of digital credit borrowers have defaulted. In contrast, 16.0 percent of Savings and Credit Co-Operative Society (SACCO) borrowers and 22.1 percent of bank borrowers said they had failed to repay their loans. There is therefore a large difference in default rates between digital credit and other loans.

What makes digital credit borrowers experience more defaults? Agarwal et al. (2019) argues that since FinTech companies do not submit to, nor access, the credit information system, there are likely to be many cases where lenders do not have the information about applicants' full borrowing activities and history, which could have increased the risks of over-indebtedness and defaults. This means that digital credit's loose screening system has ultimately failed to sort out the risky borrowers who are more likely to default. Low-income groups and temporary workers, many of whom lack the capacity to repay, might have been approved by a credit scoring system of digital credit suppliers. This might mean those low-income borrowers could be the cause of high default rates for digital credit.

However, the actual characteristics of digital credit also have the potential to cause high default rates, and to ruin the household economy, and to lead to defaults (Izaguirre et al., 2018). Characteristics of digital credit such as higher interest rates than other loans might invoke risks to the borrowers. In other words, high default rates could not be a problem caused by the poor borrowers, but also by the predatory digital credit providers which distribute loan services which carry high potential risks. And so the use of digital credit itself could increase the possibility of defaults. There are various opportunities for predatory lenders within the Kenyan

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[45] https://drive.google.com/file/d/1_2M4_PxhmaVMAyASKPlEO3uhzr1eLSzn/view

digital credit sector, since high demand for loan services, poorly informed consumers, and a loose regulatory framework exist in the Kenyan digital credit environment (Garz et al. 2020).

A similar debate has already occurred in the microfinance, which was regarded as a an antecedent of digital credit. Many studies on microfinance loan repayment have been conducted in order to reduce the default rates and improve the repayment behaviour of borrowers. Initially, the notion that the poor clients of microfinance institutions (MFIs) were mainly responsible for default cases of microfinance (Sangwan et al., 2020). In order to reduce the default rates, MFIs gradually decided to shift their original mission to serve the poor, and began to change the way they operate. MFIs exclusively entered into more developed areas where people with high incomes live (Ray and Mahapatra, 2016; Sangwan and Nayak, 2020). This seems to be a case of 'mission drift' on the side of MFIs, a phenomenon characterised by their preference for more affluent consumers while pushing out the poor (Armendáriz and Szafarz, 2011).

However, many papers (Guerin et al., 2013; Khandker et al., 1995; Sexton, 1977; Stiglitz, 1990) have challenged the argument that the poor themselves, or their poverty, are responsible for defaults, by showing evidence that income and poverty are not the only factors influencing repayment behaviours. While there is no doubting that low-income households are more likely to default, a variety of other variables, like other household socio-demographic characteristics or loan characteristics, need to be examined (Sangwan et al., 2020).

Like the case of MFIs, there is a high possibility that poverty and income level are not the only factors influencing high default rates for digital credit. However, the causes of these high default rates have not been properly identified. Although it is important to explore various causes of high defaults in digital credit, in order to reduce default risks, there has been limited research in this area. According to

Evidence Gap Map[46], providing an overview of the impact literature on digital financial services and identifies which digital financial services, including digital credit, have been investigated, there are some papers dealing with the positive effects of digital credit such as increases in income levels, but very few papers examining the problems of default. Among these few studies, a study by Kaffenberger et al. (2018) demonstrates the seriousness of late repayments and defaults in Kenya and Tanzania with survey results, but does not mention the background and causes of default. Mazer et al. (2016) empirically analysed whether the newly designed strategies for improving digital credit loan repayments are effective. According to the results, the more consumers read terms and conditions carefully and the suppliers send reminder messages, the less likely the default probability is. However, this paper only deals with the effectiveness of specific strategies for improving repayment, and does not examine causes for high default rates. Only when the causes of the default are properly identified can measures and policies be properly established to reduce the default rates. Moreover, the situation that a growing number of people have been blacklisted in the Credit Reference Bureaus (CRB) has become severe after the COVID 19 pandemic, so the life of Kenyans becomes more difficult. Therefore, research identifying the causes of the high default rate for digital credit is essentially required for suggesting solutions to this problem.

To fill this gap, I conducted a mixed-methods evaluation for identifying the factors influencing loan repayment and defaults of digital credit. The quantitative component of the mixed methods was an OLS regression using the survey data of FinAcess Household survey 2019 conducted in Kenya, from 2,576 households which were currently using. The qualitative component consisted of semi-structured interviews with borrowers, conducted in slum areas in Nairobi (Soweta, Kibera, Mukuru, and Mathare), after completing the quantitative analysis, in order to more deeply understand the context behind and causes of their late repayment behaviour

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[46] https://egm.financedigitalafrica.org/

and defaults. This paper contributes to the literature by adding to the scarce evidence about the main factors causing high default rates for digital credit in Kenya. The evaluation is also of relevance to other countries in the region like Tanzania which have also been struggling with similar problems of high default rates of digital credit borrowers (Izaguirre et al., 2018; Kaffenberger et al., 2018). Therefore, it could give insights to these other countries.

3.2   Literature review

As mentioned in the introduction, various studies exploring the causes of defaults have already been conducted. The case of MFIs could give insights about loan repayments and defaults for the digital credit environment, which has not been thoroughly examined. MFIs first came into the spotlight for providing financial services, especially loan services, to the unbanked people in LMICs (Yunus, 2004), before the introduction of digital credit. Prathap and Khaitan (2016) reviewed a diverse body of evidence on microfinance with a year-long financial diary survey of 400 active borrowers in rural southern India. They found that about 21 percent of households in the sample had suffered from heavy debt dependence. Further research prompted by over-indebtedness crises in several countries indicates that microfinance borrowers were struggling with repayment (Krishnaswamy and Ponce, 2010), and even some of the borrowers were defaulting (Pytkowska and Spannuth, 2011).

The initial expectation for microfinance was that it would stimulate the development of microenterprises in impoverished communities, leading to the creation of numerous jobs and incomes, thereby reducing poverty. International development agencies like World Bank and IMF believed that individual entrepreneurship and self-employment were the keys to eliminating unemployment, and therefore supported the creation of start-ups through microfinance. Yet, microenterprises funded by microfinance have not grown, and

many have even failed (Gomez 2008). It is mainly because local economies were already saturated with simple products and services produced by existing informal microenterprises, but a larger number of microenterprises supported by microfinance entered the market. The informal microenterprises usually do run a kiosk, cross-border trading, keeping a small number of livestocks, supplying fast food and etc; all of them are quite simple to operate, so many people are easy to enter the market. When they joined in the existing market, competition intensified, resulting in the failure of many microenterprises in a short period of time.

In Kenya, especially among women, 80 percent of microenterprises fail within three years (Mbogori and Luketero, 2019). This "easy entry-easy exit" phenomenon provoked by microfinance eventually contributed little to net job and income creation while wasting valuable financial and other resources in the process (Nightingale and Coad, 2014), and even lowered the income of poor populations. This background could be one of the main reasons why many of borrowers have been pushed into the corner with over-indebtedness. Even, people who failed in their small business inevitably experienced default.

Other than above context, in the microfinance studies, the problems related to loan repayment risks and default are addressed through various approaches and especially through the characteristics of the borrowers. Certain demographic and economic features have shown a correlation with late repayment and default (Dinh and Kleimeier, 2007; Dunn and Kim, 1999; Proscovia, 2003; Magali, 2013; Roslan and Karim, 2009; Salazar, 2008; Schreiner, 2004; Yegon et al., 2014). Among the economic characteristics of borrowers, the household income, above all, is regarded as a key factor influencing loan repayment. A household with a low-income level is more likely to fail to repay on time or default (Oke et al., 2007). In contrast, a household with a high income level tends to have greater capacity to repay. Another economic characteristic of borrowers is the number of dependents. Pollio and Obuobie (2010) assert that the probability of default increases with the number of dependents, since household expenses could inevitably increase. Those households tend to have an

increased cost of living for the family, which causes revenues to leak and exacerbates the problem of low borrower capacity to repay.

In relation to socio-demographic and economic characteristics, they have influenced not only the access to loan services as found in chapter 2, but also affected the repayment behaviour and defaults. Regarding the demographic characteristics of borrowers, education is also one of the factors influencing loan repayment behaviour (Bhatt and Tang, 2002; Pasha and Negese, 2014). It is expected that a better-educated person would have a higher ability to understand complicated financial information, which enables him or her to make the right economic decision (Bhatt and Tang, 2002). Likewise, Pasha and Negese (2014) carried out research in Ethiopia to determine the factors affecting loan repayment of MFIs and found that the education level was positively and significantly influencing loan repayment; an increase in one year of schooling increases the probability of the loan repayment rate by 4.94 percent.

Gender has been strongly evidenced that female MFI borrowers have a higher repayment rate than male ones (Dinh and Kleimeier, 2007; Magali, 2013; Proscovia, 2003; Roslan and Karim, 2009; Schreiner, 2004). Women default less frequently on loans because they are more likely to be generally hard-workers and more 'obedient' or 'culturally' disciplined (Bhatt and Tang, 2002; Pitt and Khandker, 1998). In addition, Sharma and Zeller (1997) mention that repayment rates may be expected to be higher for women because they are likely to choose the relatively less risky loans. Other than education and gender, demographic factors like residential location and age have shown correlations with late repayment and default (Arminger et al., 1997; Dinh and Kleimeier, 2007; Dunn and Kim, 1999; Magali, 2013; Proscovia, 2003; Roslan and Karim, 2009; Schreiner, 2004).

Apart from those factors relevant to borrowers' characteristics, certain critical indicators affecting loan repayment rates are the financial behaviour of borrowers. Consumers tend to make various types of mistake and wrong decisions that challenge the classical rationality principle in traditional microeconomics models

(Shen, 2016). People prefer to make judgements based on ease of justification rather than utility maximisation (Wonder et al, 2008), contrary to the economic rationality principle that people behave rationally and analyse options and decisions based on utility-based logical thinking (DiRita, 2014). The irrational financial behaviour could negatively influence loan repayment. Over-borrowing, indicating borrowing loans beyond capacity to repay, is one of irrational behaviour influencing difficulty with loan repayments and defaults. For example, if people borrow money that they cannot afford for addressing the immediate needs, then it could lead to greater credit reliance and cyclical debt, which eventually leads to higher default rates (Debnath and Roy, 2018). According to the dictionary definition[47], over-borrowing is defined as to borrow more money than a borrower can pay back or pay the interest on. Therefore, over-borrowing could be examined by the various indicators that could show borrowing beyond a borrower's capacity (see figure 9): borrowing loans excessively frequently, borrowing large amounts of money that a borrower could not pay back, and borrowing excessively from multiple lenders. All of these indicators could represent over-borrowing beyond a borrower's capacity.

Figure 9. Several definitions of over-borrowing
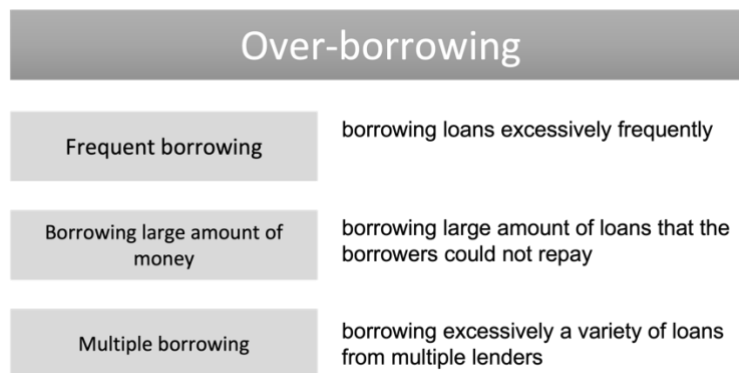
Source: Author's own elaboration

Excessively frequent borrowing is one of the irrational financial behaviours related to the possibility of repayment and default (Mensah et al., 2013). The use of loans can provide several opportunities to grow or recover household economies, but

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[47] https://dictionary.cambridge.org/dictionary/english/over-borrow

frequent borrowing can burden repayment. For example, Mensah et al. (2013) found that loan defaults in microfinance firms were also shown to have a positive link with further loans taken out. According to the findings, every 1 percent rise in more borrowing results in a 0.11 percent increase in loan default rates. This means that when consumers take out more loans, they are unable to repay all of their microcredits at the same time, resulting in an increase in default.

The amount of the loans, indicating how much money is borrowed, also seems to also be closely related to repayment behaviour and default rates. Van Gool et al. (2012) found that the incentive to deviate increases for bigger loans, so the repayment rate decreases for bigger amounts of loan requested. As more money is borrowed, the pressure on repayment would inevitably increase. If people borrow money over their capacity to repay, they are more likely to deviate from the proper or scheduled repayments.

Loans from multiple lenders, usually known as multiple borrowing, could also affect the possibility of loan repayment. Studies on the effects of borrowing from multiple sources, however, show contradictory results. Mpogole et al. (2012) indicate multiple borrowing has a positive effect on loan repayment and sustainability of MFIs. Krishnaswamy (2007) also reports that borrowers who took loans from multiple lenders have been found to have equal or better repayment records than their single borrowing peers in the same villages. This is mainly because they were able to manage liquidity problems by using a decentralized borrowing portfolio. However, contrary to this, some articles (Gwendolyn, 2001; Johnson, 2004; Rhyne, 2001; Vogelgesang, 2003; Wisniwski, 2010) show multiple borrowing could have negative impacts on repayment. Borrowing from multiple sources by low-income clients increases the incidences of over-indebtedness and consequently defaults on loans.

Looking at the problem from the supply-side, however, high defaults might also be mainly caused by the nature of the loan services themselves (Roslan and Karim, 2009; Sangwan, 2020). Therefore, it is necessary to also understand the effects of

loan characteristics on loan repayment and defaults. Interest rates are regarded as one of the significant loan characteristics directly affecting loan defaults. Loans with higher interest rates adversely affect a borrower's repayment propensity, and the possibility of default. According to a study by Sangwan (2020), with every 1 percent rise in the interest rate, the risk of loan default increases by around 15 percent.

When it comes to the loan repayment period which is one of the characteristics of loan services, the results are mixed. According to the research by Roslan and Karim (2009), MFI loan services with a long-term repayment period show a higher loan repayment rate. However, contradictory evidence also exists, indicating that loans with longer periods of repayment hinder proper repayment (Ravichandran, 2016).

There are also discrepancies in repayment results between formal loans and informal loans. Sileshi et al. (2012) conducted an analysis of smallholder farmers who had sourced their credit from both formal and informal credit institutions in Ethiopia. The findings show that the borrowers of informal loans tended more to be defaulters as compared to those who only use formal loan services, and who do not borrow from informal services. Here, it was also found that the loan service itself, with different characteristics like high interest rates, repayment periods, and types of loans also influences the risks of default.

Based on the literature exploring the factors affecting loan repayment in the microfinance industry, I have identified borrowers' characteristics, financial behaviour, and loan characteristics as three groups of critical factors influencing the outcomes of loan repayment behaviour and default.

3.3   Conceptual Framework

The conceptual framework for this study aims to give theoretical background to the analysis of the causes of high default rates for digital credit. Therefore, based on the literature review of various factors influencing loan repayments in MFIs, I develop a conceptual framework of the factors influencing loan repayment behaviour (figure 10). On the left side of figure 10, the framework includes the three aforementioned

factors contributing to loan repayment: 1) loan characteristics; 2) financial behaviour, and; 3) borrowers' characteristics.

Figure 10. Conceptual framework of the factors influencing loan repayment behaviours
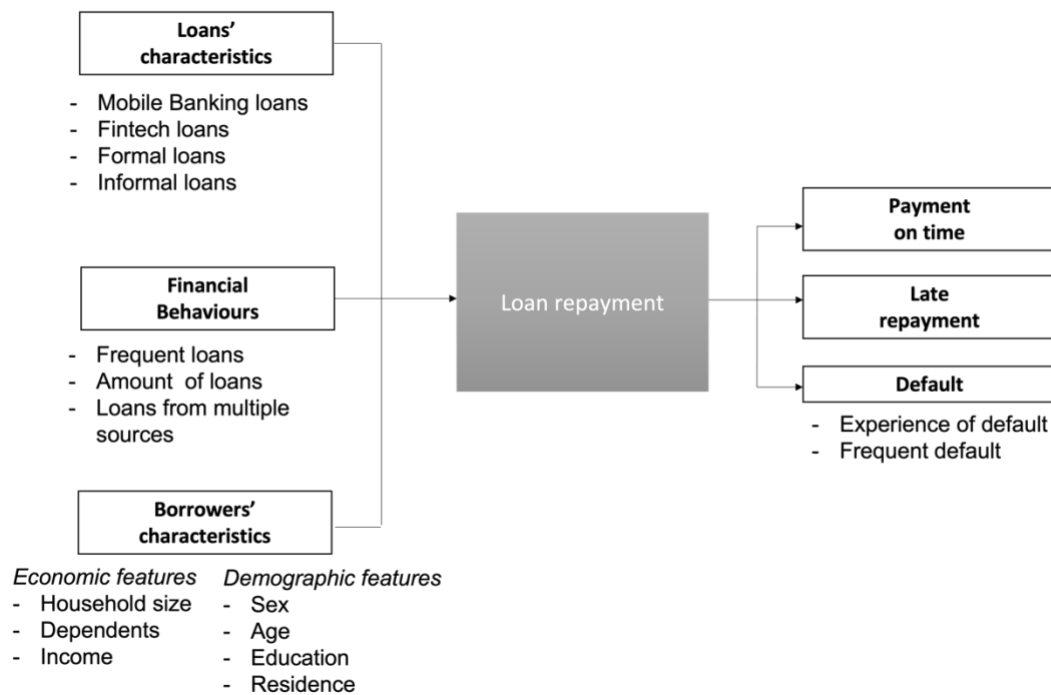
Source: Author's own elaboration

In terms of loan characteristics, it can be classified into various types of loans with different characteristics, notably interest rates, repayment periods, or formal/informal loans. A common way to categorize loans by different loan characteristics is to classify them into formal loans and informal loans, and these two types of loans have critically different characteristics. As described in section 3.2, the criteria to classify formal and informal loan is about whether a loan service is regulated by CBK or not. The loan services supplied by banks and SACCO are representative of formal loan services (FSD Kenya, 2019), and they usually provide loan services with lower interest rates and longer repayment periods than informal loans and digital credit (Herpers, 2021; Johnen et al., 2021). On the other hand, the suppliers of informal loans, sourced from such as shopkeepers and informal money lenders (FSD Kenya 2019), are not subject to regulation, so they are not forced to

implement regulations such as the interest cap (Johnen et al., 2021). Therefore, they can impose higher interest rates than those of formal loan providers (Alper et al., 2019).

Digital credit is also regarded as a distinctive loan service (Chen and Mazer, 2016), since it has distinctive characteristics; they have much higher interest rates and shorter repayment periods compared to traditional loan services. There are two different types of digital credit service: the mobile banking loan (MBL) and the fintech loan (FTL). MBLs are provided mostly by the partnership of commercial banks of Kenya and Mobile Network Operators (MNOs), while FTLs are the digital credit products provided by FinTech companies (MicroSave Consulting, 2019). The interesting point is that the suppliers of FTL have imposed even much higher interest rates than MBL, although most digital credit services already have higher interest rates than the other loan services, as explored in the previous chapter (Greenacre, 2020; Microsave Consulting, 2019).

Among the four different types of loan services listed in figure 10 (digital credit – MBL; digital credit – FTL; formal loan services; informal loan services), borrowers can make a choice of which loan services they adopt. As such, since each loan service has different characteristics, the loan payment behaviour pattern and default possibility may vary depending on what type of loan service is used. The use of particular loan services itself could influence the possibility of default.

The second category of factors in figure 10 affecting loan repayment is the financial behaviours of borrowers (Krishnaswamy, 2007; Mensah et al., 2013; Mpogole et al., 2012; Van Gool et al.,2012). As confirmed in the literature review, several financial behaviours have a strong relationship with repayment behaviours, including default. Studies identify three influential indicators related to financial behaviours on default: the frequency of loans by a borrower; the amount of money borrowed; and loans from multiple lenders. The latter behaviour, however, has contradictory evidence about whether it has impacted on loan repayment in a positive way or not

(Gwendolyn, 2001; Johnson, 2004; Krishnaswamy, 2007; Rhyne, 2001; Vogelgesang, 2003; Wisniwski, 2010).

Also, borrowers' characteristics has been regarded as a powerful factor influencing loan repayments. The borrowers' characteristics are important in all development processes or phases of digital credit, from the adoption of a loan to its impact on the borrowers. I explored the influence of borrowers' characteristics on the adoption of digital credit in chapter 2, and found that, contrary to expectations, they do not critically affect the adoption of digital credit. Here, I focus on the influence of borrowers' characteristics on repayment process. Various articles (Arminger et al., 1997; Dinh and Kleimeier, 2007; Dunn and Kim, 1999; Magali, 2013; Proscovia, 2003; Roslan and Karim, 2009; Salazar, 2008; Schreiner, 2004; Yegon et al., 2014) emphasise that understanding the influence of borrowers' characteristics on repayment is significant, since certain demographic and economic features of the borrowers have shown correlations with late repayments and defaults. The economic characteristics of borrowers have been regarded as strong causes leading to default: monthly income, household size, and the number of dependents (Oke et al., 2007). Above all, income level was considered to be the most influential factor affecting repayment (Oke et al., 2007). In particular, within digital credit, which is considered to be more used by the vulnerable population, repayments and defaults are expected to be more affected by the level of income. The reason why household size and the number of dependents were included in economic characteristics is that the number of family members and dependents is directly related to household expenditure (Lea et al.,1995).

Demographic factors are also included in the borrowers' characteristics: age, sex, education, and residence (rural or urban) location. Education is regarded as one of the most influential factors impacting loan repayment behaviours (Bhatt and Tang, 2002; Pasha and Negese, 2014). It can be assumed that a higher educational level may lead to greater financial success and higher repayment rates. Gender could also be a reason for the different outcomes on repayment (Dinh and Kleimeier, 2007;

Magali, 2013; Proscovia, 2003; Roslan and Karim, 2009; Schreiner, 2004). Lastly, the place of residence (rural or urban) is closely related to repayment behaviours (Arminger et al., 1997; Dinh and Kleimeier, 2007; Dunn and Kim, 1999; Magali, 2013; Proscovia, 2003; Roslan and Karim, 2009; Schreiner, 2004).

The influence of these factors determines loan repayment behaviours, and then there are different outcomes on loan repayment behaviours (Saha et al., 2021). These are set out on the right-hand side of figure of 10 above. The most desirable loan repayment behaviour is repayment on time, but borrowers sometimes repay late. However, some borrowers even default[48], which is the failure to make scheduled principal or interest payments (Hayden, 2003; Moodys, 2011). Borrowers may default once or multiple times. Frequent default indicates that a borrower defaults several times over a specified period of time, showing that it is elevated to a more economically dangerous situation than a single default. This paper will focus on both types of default, the experience of default and frequent defaults, which indicating different levels of risk.

3.4 Methodology

3.4.1   Mixed Methods

The study used a mixed methods approach with a sequential process from the quantitative to the qualitative approach. The mixed methods provide ways to estimate and explain quantitative impacts in the most credible way in complex circumstances. The qualitative methods can increase the validity of estimated outcomes from quantitative analysis, and enable interpretation of what is actually

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[48] Basel III, a framework of international rules for bank stress testing, liquidity requirements, and capital sufficiency, defines "default" in more detail as any credit loss event related with an obligation of the borrower, including distressed restructuring encompassing the forgiveness or deferral of principle, interest, or fees and payment delay of more than 90 days (Hayden, 2003)

happening on the ground (Bamberger, 2012). In other words, the mix of quantitative and qualitative methods will more effectively prove the main causes of default around the digital credit industry, compared to only using one approach, by enhancing understanding of the landscape of digital credit markets (Cresswell and Plano, 2007). In this study, I assemble and assess the statistical analysis of survey findings and the evidence from semi-structured interviews. This study employs a sequential mixed method design, which is used when the time orientation of the two analyses differs. This method involves conducting two analyses, quantitative and qualitative, one after the other such that the latter phase is dependent, to some degree, on the former phase (Onwuegbuzie and Collins, 2007).

A quantitative analysis is firstly adopted to analyse evidence about the causes of defaults of digital credit. Use of the quantitative method will help to identify the possible causes of high rates of defaults for digital credit among various possible factors. This approach uses the survey data from FinAccess Household Survey 2019 (FHS 2019)[49], and adopts OLS regression analysis to discover what factors have contributed to increasing the possibility of household defaults.

Sequentially, I use the qualitative data to interpret the quantitative results and to understand what is happening on the ground of the digital credit industry. The study adopted semi-structured interviews as a qualitative method. For collecting the interview data, this study adopts snowball sampling scheme. It is one of the major method in mixed methods research, the interviewees were recruited through other participants' network (Onwuegbuzie and Collins, 2007). Through the interviews with digital credit borrowers, I could find the rationale behind why certain factors identified in quantitative research influence households' defaults and late repayments. Also, the semi-structured interviews could ask about the implications of the debts for households, which do not appear in the quantitative data or analysis. In sum, the qualitative approach with in-depth semi-structured

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[49] https://finaccess.knbs.or.ke/reports-and-datasets

interviews could help to interpret findings, to assess the validity of quantitative data, and to find uncovered implications.

The uses of both quantitative and qualitative methods complement each other in terms of data abundancy. FHS 2019 contains a vast amount of data from 2,576 loan borrowers and various types of information related to the demand side of financial services. However, since the FHS 2019 data dealt with the theme of digital credit as a sub-item, not a main topic, the depth of the data was limited. On the other hand, the data obtained through the in-depth semi-structured interviews mainly focus on the use of digital credit, so it could fill the gap that FHS 2019 does not cover, making the data richer.

3.4.2   Quantitative approach

Data

The quantitative analysis used the secondary data sourced from the FHS 2019 survey, conducted by FSD Kenya, CBK, CGAP, and KNBS – as already described. FHS is a series of surveys which was started in 2006 and conducted every 2 years, designed to measure and track access to financial services in Kenya's population on the demand side. The data from this survey includes a wide range of information covering not only household economic activity and utilisation of financial services, but also household demographic characteristics. It targeted individuals aged 18 years and above, from randomly selected households, and conducted the survey with 8,660 households, designed to provide representative estimates at the national and regional level and by residence (rural and urban areas). This study analysed 2,576 households (out of the 8,660 in the survey) which had had experience of using loans in the previous year or which were using a loan at the time of the survey.

Although the most recently released data is from FHS 2021, this study does not use FHS 2021 but FHS 2019. The reason why FHS 2021 is not adopted for this study is

that the data were collected after the COVID 19 pandemic. It is difficult to say whether the FHS 2021 represents the consumers and their financial behaviour in normal periods; it could contain data influenced by the economic crisis situation caused by the pandemic. Therefore, the results of FHS 2021 could be over or under-stating the behaviours or outcomes when compared to a normal situation. For example, the default rate of digital credit in FHS 2021 was much higher (50 percent) compared to the default rate in FHS 2019 (12 percent). Therefore, this study used FHS 2019, the most recent data before the pandemic. With the data from FHS 2019, the study adopted an OLS regression model for finding out what key factors have influenced high rates of defaults for digital credit.

OLS regressions

We employ OLS regression in this study to estimate the unknown parameters in a linear regression model. OLS regression analysis would aid in determining what factors are related to the increased likelihood of household defaults. According to the Gauss-Markov theorem, if the data fulfils certain requirements of exogenous and multicollinearity requirements (Abdallah et al., 2015; Smith & Sasaki, 1979), OLS regression is the best linear unbiased estimator available (Fox, 2015). Therefore, the study conducted OLS regression in order to examine which factors have influenced the possibility of default. A simple formula below is used to represent the estimator.

- $Y_i = X_i^T \cdot \beta + \varepsilon_i$

Y_i is the dependent variable (the possibility of default), indicating household defaults. As mentioned earlier, this study wants to see whether the use of digital credit itself has impacted on the increase of default rates, so it is clear to set "default" as a dependent variable. I conducted two different regressions depending on two dependent variables: 1) the experience of default; 2) frequency of default.

X_i^T is a column vector including regressors of independent variables indicating the uses of particular loans. The uses of different types of loan services, having different

loan characteristics, are independent variables that could have a linkage with the default. This study classified the uses of loan services into four different types of loans: the use of MBL, FTL, formal and informal loans. The use of formal and informal loans is also included as an independent variable in order to compare the impact of the use of digital loan services. In the end, this is to check whether the use of a specific type of loan itself is connected to default. Even when adding other variables of the factors of financial behaviours and borrowers' characteristics, it could be concluded that the use of digital credit itself has close relationship with default if it shows a significant result. The analysis also includes the financial behaviours of amount of money borrowed, frequency of borrowing, and borrowing from multiple sources as control variables in the analysis, since they are likely to be related to default. Also, the analysis includes other control variables for the factors of borrowers' characteristics related to defaults: monthly income, the number of household members, and dependents, the degree of education, gender, age, and residence. ε_i represents unobserved random variables (error term). With this, the study examines which factors are critically associated with the possibility of defaults and late repayments.

Therefore, I specify three models for each regression analysis of the experience of default and frequent default, gradually adding regressors to check sensitivity to model specification of coefficients on our key independent variables. In model 1, only the uses of a particular loan feature; model 2 adds financial behaviours to model 1; model 3 adds borrowers' characteristics to model 2, which contains all types of independent and control variables. Stata version 16.0 for Mac was used for all statistical analysis.

3.4.3   Qualitative approach: semi-structured interview

In order to complement the quantitative analysis and to uncover the main causes of default among digital credit users, I conducted semi-structured interviews with the

interviewees who had used digital credit services. In qualitative research, sample sizes should be neither too small nor too large. When it is too small, this can make it challenging to reach data saturation, theoretical saturation, or informational redundancy. In contrast, when too large, it would be difficult to conduct a thorough analysis (Sandelowski, 1995). Therefore, 30 semi-structured interviews were conducted from June to August 2021, and I followed ethical guidance and obtained consent. I briefly explained the study before beginning an interview, making it clear that the replies would only be used for scholarly purposes and that the interviewee's name would be kept private. I also sought informed consent to record and later transcribe the interviews. During each interview, the interviewers also made structured notes, including their impressions on the interviewee's remarks.

Our semi-structured interviews had a six-part interview protocol (see Annex 6). The first section asks respondents for demographic information. The second section goes into how they used digital credit services, including the types of digital credit services they used, size of loan, and multiple borrowing (as defined in figure 9 above), consumption patterns, and so on. The third part attempts to ask about the positive and negative effects of digital credit when they used digital credit services. The fourth section asks borrowers if they are aware of consumer protection and data protection regulations on digital credit. The fifth section is about deceptive advertising and fake lenders. Lastly, I asked borrowers whether they felt that they needed regulations to protect themselves in the digital credit market. In this chapter I focus mostly on the data captured in section 1 to section 3 of the semi-structured interview protocol. The data from the fourth to sixth sections are more closely related to and dealt with in more depth in chapter 4. NVivo was used to analyse interview transcripts in identifying the themes related to different negative consequences and risks associated with borrowers' use of digital credit. Our NVivo research seeks substantive components and categorises various themes related to digital credit when being used by the borrowers.

3.5 Results

3.5.1 Basic description

Before moving on to the analysis, this section provides descriptive summaries of both the quantitative and qualitative sample. Firstly, in terms of the quantitative sample from the FHS 2019, table 8 shows that out of the 8,669 respondents, 2,576 respondents said they were currently using or have used a loan service within the last year. The regression analysis of this study is based on the respondents who have used a loan among the total, since only people who have used loan services could experience default. A quarter of total borrowers, 643 respondents, said they had or were using MBL, and 559 respondents were using FTL. It indicates 41.5 percent of people have used digital credit services among total borrowers, showing the popularity of digital credit.

Table 8. Basic demographic description of FHS 2019

VARIABLES		frequency	%
The use of MBL	No	1,933	75.0%
	Yes	643	25.0%
	Total	2,576	100.0%
The use of FTL	No	2,017	78.3%
	Yes	559	21.7%
	Total	2,576	100.0%
The use of DC	No	1,507	58.5%
	Yes	1,069	41.5%
	Total	2,576	100.0%
Sex	Male	1,166	45.3%
	Female	1,410	54.7%
	Total	2,576	100.0%
Age	18 -24 years	384	14.9%
	25 – 39 years	1,169	45.4%
	40 – 54 years	638	24.8%
	55 – 64 years	226	8.8%
	65 years -	159	6.2%
	Total	2,576	100.0%
Education	None	153	5.9%
	Primary	1,008	39.2%
	Secondary	877	34.1%
	Tertiary	535	20.8%
	Total	2,573	100.0%
Residence	Rural	1,308	50.8%
	Urban	1,268	49.2%
	Total	2,576	100.0%
Monthly income	Ksh 0 – 2250	438	17.4%
	Ksh 2251 – 5000	549	21.8%
	Ksh 5001 – 10000	624	24.7%
	Ksh 10000 -	911	36.1%
	Total	2,522	100.0%
Amount of loans	Ksh 0 – 1000	609	23.6%
	Ksh 1001 – 10000	965	37.5%
	Ksh 10001 – 50000	498	19.3%
	Ksh 50001 -	504	19.6%
	Total	2,576	100.0%
Frequency of loans per year	Once	1,049	36.5%
	2-3 times	752	26.1%
	4-10 times	581	20.2%
	More than 10 times	494	17.2%
	Total	2,876	100.0%
Loans from multiple lenders	One type of lender	1,753	68.1%
	2-3 types of lenders	737	28.6%
	4-5 types of lenders	82	3.2%

	More than 5	4	0.2%
	Total	2,576	100.0%

Source: FHS (2019)

In terms of frequency of loans, 36.5 percent of all borrowers used a loan service once a year, 26.1 percent used a service twice to three times, and 20.2 percent used it four to ten times a year. Surprisingly, 17.2 percent of consumers, 494 respondents, utilised lending services more than ten times within a year, indicating that the borrower received a new loan service about once a month on average. This rise in excessive borrowing could be related to the introduction of digital credit. Further analysis of the 494 customers, who utilised a loan service 10 or more times in a year, reveals that 86.0 percent of them, 425 customers, are digital credit users. This shows that digital credit borrowers use loan services more frequently compared to other loan borrowers. Digital credit services, which require payment of principal and interest within one month, are based on short-term loans with no limit on the frequency of borrowing, thus users can use digital credit services indefinitely as long as the lenders allow. Also, the convenient and quick procedures of digital credit may also contribute to the excessive frequency of borrowing of digital credit users.

In relation to borrowing from multiple lenders, the majority used only one loan source (68.1 percent), and not many people used loan services from more than three sources. According to table 8, 28.6 percent get loans from two or three distinct sources, but only 3.2 percent of the borrowers have utilised more than four distinct types of lending services. However, the qualitative data revealed that this does not mean that borrowers only rely on one loan provider. According to the findings from the interviews, there are many borrowers who primarily use digital credit, but who utilise loan services through multiple platforms of different digital credit providers at the same time, even if they do not use other types of loan services such as banks and SACCO. But in the FHS 2019 survey, a borrower is assigned to the category of using only one type of lender.

Also, table 8 shows that micro-loan borrowers, borrowing less than Ksh 10,000 (around US$ 86) account for more than 60 percent of all borrowers. But surprisingly, even with a lot of microloan borrowers, the mean loan amount for all borrowers was Ksh 110,286. This is far higher than the median borrowing amount of Ksh 6000. This shows that most borrowers in Kenya are biased towards microloans.

Table 9 describes the key characteristics of the qualitative sample. The total number of respondents was 30, and the targeted interviewees were more than 18 years old. More than 66 percent of respondents did not receive education above the level of college. Also, a noteworthy point about income source is that only one in 30 respondents has a full-time job, indicating that people living in slum areas have unstable work and income.

An interesting finding is that the majority of interviewees owned smartphones rather than feature phones, even though they live in deprived areas. Moreover, more than 33 percent of respondents had both types of phone, a feature phone and a smartphone. This shows that phone penetration is quite high even in poorer parts of LMICs like Kenya.

Table 9. Basic demographic description of semi-structured interviews

Variables		frequency	%
Sex	Male	12	40.0%
	Female	18	60.0%
	Total	30	100.0%
Age	18-35 years	12	40.0%
	36-60 years	17	56.7%
	60 years and above	1	3.3%
	Total	30	100.0%
Education	Some primary	1	3.3%
	Completed primary	7	23.3%
	Some secondary	3	10.0%
	Completed secondary	9	30.0%
	Some college / vocational training	3	10.0%
	Completed tertiary / Diploma	5	16.7%
	University and post-graduate	1	3.3%
	N/A	1	3.3%
	Total	30	100.0%
Region	Soweto	9	30.0%
	Kibera	8	26.7%
	Mukuru	6	20.0%
	Mathare	7	23.3%
	Total	30	100.0%
Income sources	Formal employment	1	3.3%
	Casual / temporary employment	7	23.3%
	Own business / self-employed	22	73.3%
	Total	30	100.0%
Phone	Smartphone	17	56.7%
	Feature phone	2	6.7%
	Both	10	33.3%
	N/A	1	3.3%
	Total	30	100.0%
Marital status	Single	9	30.0%
	Married	16	53.3%
	Live together / Co-habiting	3	10.0%
	Divorced / separated	1	3.3%
	Widowed	1	3.3%
	Total	30	100.0%

Source: FHS (2019)

In the next section, with the mixed methods approach, I analyse which factors have influenced the possibility of defaults among three different variables: the use of a specific loan (especially digital credit); financial behaviour; or consumer demographic characteristics.

3.5.2   The use of particular loans (loan characteristics)

In order to confirm which variables are correlated to the possibility of defaults, I first conducted the OLS regression analysis. The linear probability model was used to facilitate comprehension in a clearer and easier way. This section would focus on one of the possible variables, the use of a particular loan, especially digital credit. Table 10 shows the results of regression analysis on the experience of default within 12 months by a borrower. The dependent variable is dummy variable indicating whether a borrower has experienced the default or not.

Table 10. Regression analysis of experience of default (ever experienced)[50]

	(1)	(2)	(3)
VARIABLES	Default (experienced)	Default (experienced)	Default (experienced)
The Use of MBL (Y/N)	**0.077***	**0.062**	**0.079***
	(0.0175)	(0.0258)	(0.0266)
The Use of FTL (Y/N)	**0.155***	**0.097***	**0.096***
	(0.0190)	(0.0283)	(0.0288)
The Use of Formal loan (Y/N)	**-0.032***	-0.048	-0.046
	(0.0186)	(0.0319)	(0.0323)
The Use of Informal loan (Y/N)	0.015	-0.001	-0.018
	(0.0178)	(0.0278)	(0.0283)
Amount of loans (amount of money borrowed)		0.009	0,019
		(0.0106)	(0.0114)
Frequency of loans		**0.035***	**0.037***
		(0.0087)	(0.0087)
Loans from multiple lenders		-0.011	-0.007
		(0.0261)	(0.0263)
Sex			0.003
			(0.0155)
Age			-0.009
			(0.0079)
Education			**-0.036***
			(0.0105)
Residence (rural/urban)			0.001
			(0.0165)
Household size			0.004
			(0.0053)
Number of dependents			0.001
			(0.0065)
Monthly Income			-0.009
			(0.0080)
Constant	**0.114***	**0.061**	**0.160***
	(0.0186)	(0.0271)	(0.0500)
Observations	2,576	2,492	2,441
R-squared	0.038	0.043	0.050

*** p<0.01, ** p<0.05, * p<0.1

Source: FHS (2019)

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[50] The OLS estimator requires that the explanatory variables are exogenous and there is no perfect multicollinearity. Therefore, I checked exogeneity and multicollinearity.

Firstly, with regard to the use of particular loans, according to the OLS regression analysis of table 10, the coefficient values of the uses of both digital credit services, MBL and FTL, are statistically significant in all models as a positive relationship to the experience of default. In all models, the results show that the borrowers using digital credit services are more likely to have the experience of default. This means that the use of digital credit services is closely correlated to the experience of default. The coefficient values of the use of digital credit services in the complete model, model 3, are (+)0.079 for MBL and (+)0.096 for FTL ($p < 0.01$), and they are the largest coefficient values in the model 3 compared to other variables showing significant results ($p < 0.01$). This means that the use of two different types of digital credit products itself has the strongest connection with the experience of default among all possible variables. In contrast, the variables of the uses of formal and informal loans do not show any robust results unlike the uses of digital credit. The use of other loans is not directly associated with the possibility of default.

But why is the use of digital credit itself correlated to default the most? What characteristics of digital credit are associated with default? Through the semi-structured interviews, I explored why the use of digital credit has a greater impact on defaults than the use of other loans. The qualitative analysis confirmed that it was the unique characteristics of digital credit that are closely related to the possibility of defaults. The first problem raised by the interviews was that the higher interest rates of digital credit have created higher burdens for the borrowers with their repayments. The respondents thought that digital credit was more expensive than traditional loan services. This finding is in line with the assertion by Sangwan (2020) that higher interest rates increase a borrower's likelihood of poor repayment. As mentioned earlier, the interest rates of digital credit services are far higher than those of other providers such as banks, SACCO, and even informal lenders, increasing repayment burdens. The respondents already recognised this and one of them commented as follows:

> *"Interest on digital borrowing is high compared to the bank"*

In addition, the most frequently mentioned cause of high levels of default for digital credit during the interviews was the problem of short repayment periods for digital credit, compared to other loans from formal loans like banks and SACCO, and even informal loans. Digital credit usually gives 2 weeks or 1 month as a repayment period at most. Fuliza, a digital credit provider, even operates a daily repayment system. It is too short for many to repay the money. Short repayment periods placed a significant load on debtors. There are some studies which argue that shorter repayment periods would improve repayments (Ravichandran, 2016), but the findings from the interviews clearly contradict this. Rather, the qualitative data back up the conclusion that loan services with a long-term repayment period enable the borrower to make better repayments (Roslan and Karim, 2009). According to the interviewees, the repayment time of digital credit is too short to be able to make any profits from business and to be able to repay it. Some respondents mentioned that they utilised digital credit for their businesses. But profiting from an investment will obviously take time. The borrowers are burdened with repayments before they get a return on their investment, because the payback time given by digital credit suppliers is generally within a month. One borrower explains his business situation regarding this issue:

> *"I tried establishing a business with the money but because of the short repayment period, the business failed."*

As a result, the short payback time might be viewed as one of the elements contributing to the increase in debt load rather than as a new opportunity for borrowers.

I also identified the risks of unlimited (frequent) lending and this also makes the borrowers' repayments difficult (see also section 3.5.3). Digital credit borrowers can borrow money again and again as soon as a borrower pays it back. Digital credit lenders even provoke this continuous borrowing with their aggressive marketing. Consumers are tempted to borrow money constantly because there is no limit to the number of times they can borrow. This continuous borrowing makes the borrowers

even more burdened with repayments. In the end, this can worsen the economic situation by making consumers constantly dependent on the loan.

> *"I use M-Shwari countless times, Fuliza almost continuously."*
>
> *"I cannot count the number of times I have borrowed from M-Shwari."*

Those characteristics of digital credit could be the main reasons why the use of digital credit itself has significantly influenced the experience of defaults.

The regression results about the *frequency* of default in table 11 below are different from the results about the experience of default above in table 10. Table 11 shows the results of regression analysis on the frequency of defaults within 12 months by borrowers. The frequency of default is more relevant for understanding chronic defaults on loan services than the experience of default (table 10), since it can show how much borrowers default repeatedly. The experience of default could just happen once in a lifetime, but there is a possibility that people could not stop borrowing money and continuously fail to repay. A one-off experience of default by a borrower is probably recoverable and unlikely to have significant harmful effects on individual credit rating, but a number of defaults could lead to an individual into bankruptcy. Therefore, not only an analysis of the experience of default, but also an analysis of how frequently default occurred is required (Saha et al., 2021).

Table 11. Regression analysis of frequency of default (total number of defaults within 12 months)

VARIABLES	(1) Default (frequency)	(2) Default (frequency)	(3) Default (frequency)
The Use of MBL (Y/N)	-0.027	-0.032	0.040
	(0.0663)	(0.0977)	(0.1006)
The Use of FTL (Y/N)	**0.781***	**0.499***	**0.553***
	(0.0720)	(0.1072)	(0.1089)
The Use of Formal loan (Y/N)	-0.078	-0.015	0.030
	(0.0704)	(0.1206)	(0.1224)
The Use of Informal loan (Y/N)	0.030	0.056	0.014
	(0.0672)	(0.1052)	(0.1070)
Amount of loans (amount of money borrowed)		0.021	0.022
		(0.0400)	(0.0430)
Frequency of loans		**0.246***	**0.254***
		(0.0327)	(0.0331)
Loans from multiple lenders		**-0.207**	**-0.188***
		(0.0987)	(0.0995)
Sex			0.043
			(0.0587)
Age			0.021
			(0.0299)
Education			**-0.136***
			(0.0396)
Residence (rural/urban)			-0.049
			(0.0626)
Household size			**0.049**
			(0.0200)
Number of dependent			0.015
			(0.0248)
Monthly Income			0.040
			(0.0302)
Constant	0.235***	-0.039	-0.094
	(0.0705)	(0.1026)	(0.1893)
Observations	2,576	2,492	2,441
R-squared	0.03855	0.04373	0.05091

Notes:*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Source: FHS (2019)

The results from table 11 show that the effects of using a formal and informal loan service, and also the use of MBL, are not significant for the frequency of defaults in all models ($p > 0.1$). They do not have any significance on the frequency of defaults.

However, the use of FTL still has strong correlation with the frequency of default in every model, the same as with the regression analysis of the experience of default in table 10. The coefficient value of the use of FTL of model 3 in table 11 is (+)0.553 (p < 0.01). And the use of FTL is strongly correlated to the frequency of default the most among several variables; the coefficient value of the use of FTL is the largest in the regression model. The variables of frequent borrowing, borrowing from multiple lenders, education, and household size, seem to have close relation with the default frequency (p < 0.1), but the coefficient value of the use of FTL outweighs them. Unlike other loans, therefore, only the usage of FTL seems to have the strongest association with both the experience and frequency of default. This finding shows that the use of FTL itself has the most powerful connection with chronic loan defaults, which could lead the borrowers into economic crisis.

A notable result above is that not all types of digital credit services are negatively correlated to the frequency of defaults. Unlike the use of FTL, the variable of the use of MBL does not show any significant relationship with frequent default. Only the use of FTL is directly related to frequent default. Why does the use of FTL have a greater impact on frequent default? One possible reason is FTL products like Tala and Branch have critically higher interest rates than MBL, even though the interest rates of both digital credit services are already high enough. Through the interviews, some respondents mentioned that the interest rates of M-Shwari and KCB M-Pesa (MBLs) are moderate, but those of FTLs are very high. In fact, their interest rates are nearly twice as high. MBL's representative services, M-Shwari and KCB M-Pesa, are provided at 7.5 percent per month, while FTL's representative services, Tala and Branch, are provided at 15 percent per month (MicroSave Consulting, 2019), as described in the literature review. This finding on the difference between MBLs and FTLs strengthens again the finding of Sangwan (2020) about the influence of high interest rates on high default rates. Two respondents expressed their thoughts on the interest rates of FTL:

"Tala, their interest is very high."

"I think the fee was ok and moderate for the 7.5%. At least it is okay with me, but Tala's is very high."

Therefore, I can assume that the higher interest rates of FTL make their customers more burdened and more likely to default than MBL borrowers. However, I could suggest another possible reason why the use of FTL influences the frequency of default. In general, for most sources of loans, once you fail to repay a loan, it is difficult to borrow again until you pay it back or regain your credit score. If you borrow money from an official financial institution and do not pay it back, your name will be blacklisted through CRB and you can no longer access other loan services. In addition, financial institutions that share CRB information will be able to filter out consumers who default. Banks that supply MBL also have access to this information. But the FinTech companies supplying FTLs are not. They evaluate consumers by using their own credit scoring system without relying on existing credit rating information by CRB (Francis et al., 2017). Even though their lending algorithms are highly guarded trade secrets, it is known that the lenders mine users' devices and social media profiles in order to evaluate their creditworthiness (Donovan and Park, 2019), and this data is the main basis for credit scoring.

A trap can occur right here. FTL mainly conducts credit scoring for evaluating their customers through information collected from mobile phones such as airtime, so there is a limit to finding out whether a consumer defaults. As noted by Bernards (2019), daily life and financial behaviors seem not to have consistent interactions, and therefore poses a challenge for new digital credit scoring systems that rely on data such as social media activity and airtime charging. In other words, it is difficult for the credit scoring system of FTL, which scans patterns of mobile phone use or internet browsing histories, to accurately predict financial behaviors like repayment and default due to the inconsistent interactions between them (Bernards, 2019). This challenges the claim that the credit scoring system of digital credit can perform more accurate credit evaluation (Chen and Mazer, 2016). In the end, FTL consumers are more likely to increase the number of defaults by using various FTL platforms

in turn without paying back. Through the semi-structured interviews, cases were identified of people who have borrowed money through other applications after defaults have not been found. Thus, it is reasonable to assume that the use of FTL affects frequent defaults since FTL's credit rating itself has limitations to evaluate their customers who have the histories of defaults (Putman et al., 2021).

3.5.3   Financial behaviours

The variables of financial behaviours are also important factors related to the possibility of default. Among several financial behaviours related to default, according to the regression results in tables 10 and 11, the amount of loans (amount of money borrowed) seems not to have critical connections both the experience (table 10) nor frequency (table 11) of defaults since the coefficient values for the variable 'amount of loans' does not show any significance ($p > 0.1$). This finding contradicts the evidence of Baesens (2011) which suggests that the repayment rate decreases when loan amounts obtained become larger because the temptation to deviate grows with larger loans.

However, the influence of the *frequency* of borrowing on both experience (table 10) and frequency of default (table 11) does show meaningful results. The coefficient value of model 3 in table 10 is (+)0.037 ($p < 0.01$), and in table 11 it is (+)0.254 ($p < 0.01$), which shows that frequency of borrowing is the second largest factor in all regression models after the values of the use of digital credit services. This means that the more frequently a borrower takes loans, the more likely he or she is to experience default and also default multiple times. Also, it is the only variable in the financial behaviour category having statistical significance in all models of both regression analyses. It supports the assertion by Mensah (2013) that loan defaults in MFIs have a positive relationship with the number of loans obtained.

What we need to pay attention to here is that digital credit services are the biggest facilitator in increasing the frequency of borrowing, as already discussed (see table 5

in section 2.5.1), because consumers who utilise digital credit tend to borrow more frequently. According to brief analysis based on the data of FinAccess Household Survey 2019[51], people who borrow digital credit through a bank (MBL) use the services more than three times per year on average, whereas digital credit users who sourced credit from fintech firms (FTL) utilised the services about 27 times per year, which is a surprising figure (see table 5 in section 2.5.1). In contrast, bank and SACCO borrowers use loans once a year and even borrowers using informal lenders access the loans about twice a year. This demonstrates that both types of digital credit services are utilised far more frequently than traditional lending services, and it is closely related to unlimited lending by suppliers.

The qualitative data revealed several reasons why digital credit borrowers seek and obtain loans more frequently than borrowers of other loan services. The easy and quick process of digital credit, which could be a double-edged sword, is one of the reasons. People mentioned that digital credit is more accessible because it is easy and instant to use. It could be helpful for the borrowers who need money urgently, but at the same time, however, these characteristics enable people to use digital credit indiscriminately. In fact, 28 out of the 30 respondents had used digital credit services more than three times in a year, confirming that they were frequently borrowing money, even though digital credit lenders impose high interest rates. Several borrowers mentioned that digital credit is tempting. The characteristics of digital credit tempted them to continuously use the service: instant receipt of money, no requirements for guarantors and collateral, and compact procedures. The borrowers even said things such as:

> *"Digital credit is addictive like drugs."*

Furthermore, the fact that the loan size of digital credit is considerably smaller than other loan services from banks and other financial institutions provokes frequent

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[51]

https://www.centralbank.go.ke/uploads/financial_inclusion/1035460079_2019%20FinAcces%20Report%20(web).pdf

use of digital credit. According to the findings from interviews, the average credit limit of digital credit is less than Ksh 2500 (US$ 22) when the interviewees firstly used the digital credit services. Even the highest credit limit they experienced did not exceed Ksh 10,000 (US$ 88) on average, regarded as a small-sized loan. Through the interviews, I found that digital credit borrowers might even borrow continuously due to the insufficient loan amounts available. One respondent stated:

"Their limit was too low at five hundred, which made me borrow once, twice and…"

It shows the small size of the loans available could make people fall into the trap of continuous borrowing.

Also, from the supply side, digital credit suppliers' business strategy contributed to people taking loans more and more often. I found that the loan size of digital credit is quite small when a borrower firstly borrows money, but the more and more he or she borrows money, the higher the credit limit becomes. Therefore, people said they intentionally borrow digital credit loans multiple times in order to raise the limit:

"A person keeps borrowing a higher amount as the limit rises."

"I love the loan limit increment which was enticing for me. For example, borrowing three thousand twice and I get my limit increased to six thousand. I was having fun with that."

All of these characteristics of digital credit have the possibility to increase frequency of loans, which leads to many borrowers adopting continuous borrowing and even into a debt trap.

The last important variable to examine under borrowers' financial behaviour is that of loans from multiple lenders, which indicates the extent to which people borrowed money through multiple sources. According to the results from the regression analysis on the frequency of default in table 11, it is intriguing that borrowing money through multiple lenders showed a negative correlation with the frequency of defaults: the more money you borrow through multiple lenders, the

less the possibility of frequent defaults. The coefficient value of model 3 in table 11 is (-)0.188 (p < 0.1), and it is not greater than that of frequency of loans but greater than other variables of borrowers' characteristics considering the size of coefficients. It indicates that borrowers' financial behaviours are more correlated to defaults than borrowers' characteristics. In contrast, the quantitative results show that the variable of loans from multiple lenders does not have close relation with the experience of default (table 10), unlike frequent defaults (table 11). This means borrowing the loans from multiple sources is not related to whether a borrower defaults or not, but at least it can reduce frequent defaults. These results bolster the argument (Krishnaswamy, 2007; Mpogole et al., 2012) that borrowing money through various lenders can lower the risk of default, in spite of the controversy on the effects of loans from multiple lenders on defaults.

The biggest reason for this result seems to be that borrowers' liquidity problems can be temporarily resolved by borrowing money through various lenders. People who have a loan due for repayment would try to borrow another loan through other channels to repay the original loan. The ability of borrowers to handle liquidity issues through the deployment of a decentralised loan portfolio contributes to reducing default risks over a short period of time. According to the interviews, the respondents also discussed how they tend to borrow from various lenders. Some use digital credit along with the formal loan services by banks, microfinance institutions and SACCO, but more with informal routes such as Shylock[52] and Chama. By borrowing money from various lenders in turn, multiple borrowing contributes to decrease the likelihood of default.

Yet, there is another type of borrowing from multiple lenders, which is not captured in the regression analysis. As mentioned earlier in section 3.5.1, the case of

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[52] Shylock is a fictional character in William Shakespeare's "The Merchant of Venice" and is also a term for a person or organization which offers loans through informal channels at extremely high interest rates. You can find more about shylock through the following links: https://urbankenyans.com/getting-a-loan-from-a-shylock-in-kenya/ http://kenyaloans.com/shylocks/

borrowing money from various digital credit lenders is assigned to MBL or FTL, but this is considered in the regression analysis as borrowing money from a single source, rather than from a multiple source. It is because the information on the kinds of various digital credit platforms the borrowers have used was not included in FHS 2019 data.

Therefore, the qualitative approach could fill in this gap and supplement the findings about multiple lenders. Qualitative findings reveal that many respondents had accessed various digital credit lenders at the same time rather than using other different types of loans like banks and SACCO. There are currently over 120 types of digital credit service in Kenya, so people can easily borrow money from various digital credit platforms. If a borrower finds it difficult to obtain money for repayment of a digital loan within the given timeline, the most convenient approach to repay the money is to gain another digital loan from a different digital credit service which can provide money quickly. From the qualitative results, I found that the borrowers used to take turns paying back loans from different digital credit platforms utilising multiple digital credit services.

> *"The problem is not being given enough time for repayment. I have pressure to repay. Sometimes I borrow from elsewhere to pay the digital loans. I borrowed from other digital lenders to pay the loans which had lent me the principal amount."*

They were repeatedly using various digital credits just for repayment, which could not be seen as productive expenditure. It could influence negatively rather than positively repayment behaviours in the long run.

This financial behaviour of using various digital credit loans at the same time may lower the short-term default rate, but in the long-term it has the potential to make people more reliant on loans. Also, interest costs will inevitably increase, and the economic burden of loans will be heavier if he or she continues to adopt multiple loans. This is likely to adversely affect households. However, FHS 2019 that I utilised in the analysis is limited in explaining the long-term influence of multiple borrowing on default.

3.5.4 Borrowers' characteristics

The last factor related to the possibility of default is borrowers' characteristics. The notable point in variables of borrowers' characteristics is that borrowers' economic situations are not critically associated with the default rates as much as expected. The quantitative findings show that the borrowers' income does not show any meaningful result on both the experience and frequency of defaults in all regression analyses ($p > 0.1$). This is contrary to the argument found in the early days of microfinance research, when the high default rate of microfinance was attributed to its poor customers. This study contradicts the arguments or evidence that households with a low income are likely to default (Oke et al., 2007).

The household size, which can be seen as directly related to household living costs, has correlation with frequent default to some extent ($p<0.05$), but the result is smaller compared to other significant variables like the use of digital credit, and the frequency of loans. The evidence from the quantitative study therefore suggests that the economic status of borrowers and the size of the household (and so living costs) might not be the main factor related to defaults.

Regarding the demographic features of borrowers' characteristics, the study finds a negative sign of coefficient for education ($p < 0.01$) in all regression models, both in table 10 and table 11, indicating that more-educated people are less likely to default. These results reinforce the findings of existing studies (Bhatt and Tang, 2002; Pasha and Negese, 2014). The higher the levels of education, the more likely the borrowers are to become familiar with the terms and conditions of financial instruments, and the more likely the borrowers are to accurately understand the negative outcome of using loans, such as having to default. That could be why the more educated among the population tend not to default.

The importance of education can be further analysed through the findings from the qualitative interviews. None of the respondents remembered the exact interest rates

of the loans they had, when I asked them how much the interest rates of digital credit services were. They just knew the approximate amount of money they have to repay, and some of them even did not know that. One respondent mentioned that she did not check the interest rate when she accessed loan services. Another respondent even had no intention of wanting to know the interest rate, even though he was currently using digital credit services.

> *"I did not bother to know about the interest. I don't want to know"*

These findings indicate that people are easily borrowing money without sufficient financial knowledge needed for their transactions. And there were also the respondents who did not know what would happen if they did not pay back. Three respondents even thought that throwing away the sim card would allow them to run away from digital credit providers without paying back the money.

> *"I stopped using the service completely and never paid back, I threw away my sim card. I switched and started using another service."*

This limited financial knowledge does not just end with poor use of financial services, but can provoke problems in that it can put people in financial crisis. If people do not understand the consequences of default, they can easily borrow money from the most accessible loans like digital credit without much consideration or caution, leading to negative results. Therefore, more appropriate financial education is essential when adopting loans with high interest rates and high risks like digital credit services.

With respect to gender, the regression analysis in particular also contradicts the widely held belief on gender that males are more prone than women to default. The result, that the coefficient value of the gender variable does not show any significant results ($p > 0.1$), like variable of monthly income, shows that gender might not be associated with the possibility of default. In circumstances where the borrowers have used microfinance services, women have been regarded to default less on loans than males, since they are more generally likely to comply with ethics and

resist moral hazard (Bhatt and Tang, 2002; Dinh and Kleimeier, 2007; Magali, 2013; Pitt and Khandker, 1998; Proscovia, 2003; Roslan and Karim., 2009; Schreiner, 2004). As a result, microfinance has been established with an emphasis on women rather than men. However, the findings of this study contradict this perception about gender effects.

The semi-structured interviews found limited gender effects on defaults. This is not representative, since the sample is not large enough, but I could infer some tentative implications on gender issues. Looking at the simple demographic results of the interviews, 8 out of 18 women (44 percent of women) had had default experience, and 6 out of 12 men (50 percent of men) had had the experience. Women were therefore less likely to default slightly, but it is not a large gap. These findings support the results from the quantitative analysis. This is because this study is different from the literature focusing on microfinance. The fact that women are more devoted to repayment may be applied only to a microfinance-specific narrative. Microfinance is distinctive from other loan services due to the characteristics of group-lending, so it is based on social principles and moral norms, such as communal lending, which makes females more likely to repay. In contrast, the gendered repayment behaviours related to digital credit could be different from microfinance, since digital credit is based on individual lending.

3.5.5 Summary of results

The results from the complementary quantitative and qualitative approaches reveal some interesting insights. Based on the analysis, the nature of digital credit itself has critical correlation with the experience of default more than the other variables of financial behaviours and borrowers' characteristics. This means that using digital credit itself can have the greatest risk of default. In other words, digital credit has various risks to be resolved. Qualitatively, I have confirmed that digital credit has problems such as high interest rates, short repayment periods, and inducement of

frequent borrowing. All of these features make digital credit borrowers more likely to default. It is time to consider how the risks of digital credit can be reduced.

Among the "financial behaviour" variables, the amount of money borrowed has no effect on the default, but the frequency of borrowing has been found to be correlated to both the experience and frequency of default. The more you frequently borrow money, the higher the probability of default. Another interesting point here is that I was able to identify through the interviews that digital credit borrowers access digital loans more frequently than other loan services, since the features of digital credit induce people to borrow more and more.

In contrast, I identified the borrower's characteristics are less associated with the likelihood of defaults. This contradicts the notion that the high rate of defaults is mainly because customers are poor. As can be seen in this study, and going against expectations, it was confirmed that the demographic or economic characteristics of borrowers did not have a significant impact on defaults. Except for the number of household members or education level, the characteristics of households or individuals did not show any correlation with the default rate: the household income, age, and the number of dependents seems not to be related to the default rate at all.

3.6   Conclusion

The growth of digital credit can be said to have contributed to financial inclusion to some extent by expanding the use of various financial services in the Kenyan financial industry. However, rapid growth has caused many unintended side effects, and the biggest problem is the high rate of default and an increase in the number of people being blacklisted. The default rate of digital credit is much higher than the average default rate on the loans provided by banks and other financial institutions.

It could easily be believed that the high default rate of digital credit is due to their customers, because many of them are regarded as vulnerable people who have lack of capacity to repay. We cannot ignore the fact that there are a significant number of people in economically desperate situations in Kenya. Due to the failure of small businesses or unemployment, they have been forced to turn to loan services, especially digital credit services, in order to sustain their daily life and repay their existing loans.

However, this study confirmed that the use of digital credit itself has a more significant influence on the possibility of default than borrowers' economic and demographic characteristics. It is mainly because the characteristics of digital credit, such as higher interest rate, a short repayment period, and inducement of frequent loans, make it difficult for the borrowers to repay. This suggests that digital credit products themselves need to be improved. Much higher interest rates and excessively shorter repayment periods than other loan services clearly make it more difficult for digital credit borrowers to repay, so some modifications on digital credit products are needed.

However, it is unlikely that lenders will voluntarily fix their loan products by themselves since they have been able to earn significant profits by charging exorbitant interest rates on borrowers even before pandemic. However, household economics in Kenya have worsened due to COVID-19, and more than 50 percent of borrowers utilizing digital credit have already defaulted on loans, as mentioned earlier. This indicates that more than half of their customers have failed to repay their loans, which threatens the sustainability of the digital credit business. High default rates not only adversely affect consumers but also lenders. To continue earning from the digital credit industry, lenders must modify the current business structure and re-examine their credit scoring system, which has failed to filter out potential defaulters. Additionally, external regulatory approaches are necessary to control any predatory digital credit services, such as products with exorbitant interest rates, to reduce default rates. Yet, it is required to be noted that these

regulations may face opposition from digital credit providers who have been conducting business in an unregulated environment until now.

This paper is expected to contribute to the current literature on digital credit by adding evidence about a major factor in Kenya's high digital credit default rate. The findings are of relevance not only to Kenya, but can also offer implications to various countries in Sub-Saharan Africa and Southern Asia, which have actively adopted digital credit services but also suffered from high default rates. This can raise the alarm to the countries that just focus on boosting the digital credit industry for financial inclusion without monitoring or caring about the debt and default effects of digital credit. Also, it provides insights into what features of digital credit to re-design in order to lower the default rate.

4.   Shadows of Digital Credit: Perspectives on Financial Regulation in Kenya

Abstract

After successfully settling down in Kenya's financial industry, digital credit was expected to improve financial inclusion by providing loans to financially excluded populations and to contribute to being an enabler of development of the household economy. However, contrary to this expectation, borrowers are struggling with violations of consumer rights due to the absence of proper regulation. This paper, through semi-structured interviews with 30 digital credit consumers, and two key informant interviews with digital credit lenders, finds that digital credit consumers are being unfairly treated. Consumers are suffering from exorbitant interest rates, aggressive business strategies for consumers to borrow unlimitedly, and unlicensed lenders. Inappropriate debt collection methods by the credit suppliers are also causing mental distress for consumers. In addition, there are problems with the transparency of digital credit due to the infringement of data privacy and deceptive marketing. Key informant interviews with digital credit lenders showed that they are also aware that digital credit has created problems for consumer protection.

In response, the Central Bank of Kenya Amendment Bill 2021 was introduced in December 2021 to solve consumer protection problems raised by the digital credit industry. This is meaningful as the first attempt to regulate the digital credit industry, but the study reveals that the bill leaves very significant gaps to be addressed: clauses of the bill are not sufficient to resolve the problems identified in the study. In addition, some articles of the bill potentially put both borrowers and lenders at risk.

4.1 Introduction

After the first launch of mobile money, M-Pesa, in 2007, Kenya became a leading country where mobile money services have been quickly and widely spread. As of 2022, the Kenyan mobile money market was valued at $110 billion and is expected to grow at a rate of 20.1 percent from 2023 to 2028, reaching $348 billion, according to the IMARC Group (2022). This expansion of mobile money access has resulted in traditional financial institutions launching digital credit, mobile-enabled loan services. In accordance with this spread of digital credit services by financial institutions, FinTech firms, invested in by multinational financial companies like Visa and Paypal[53], have entered the Kenyan market. In 2022, the Kenyan FinTech sector raised $158 million in financing, which is more than three times the amount raised in 2021 and a new record[54]. Branch, one of the most representative FinTech firms in Kenya, has received investment close to $260 million, while Tala, another FinTech, has raised more than $109 million from investors keen to generate sustainable profits in Kenya (Donovan and Park, 2019). Over 120 companies are already operating digital credit lending businesses in Kenya[55].

In spite of remarkable growth, concern about consumer protection related to digital credit has risen in Kenya (Francis et al., 2017; Mitheu, 2018). Harigaya (2017) provides evidence that the use of digital banking could negatively impact household savings and make the borrowers more reliant on loans. Fick and Mohammed[56] also warn that Kenya is now confronting dangerously high levels of

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[53] https://www.cnbc.com/2021/10/14/tala-fintech-for-unbanked-raises-145-million-for-global-crypto.html

[54] https://fintech.global/2023/02/24/kenyan-fintech-sector-sets-new-record-in-2022-with-158m-capital-raised/

[55] https://www.geopoll.com/resources/digital-lending-kenya-dlak/#:~:text=Digital%20lending%2C%20which%20provides%20people,digital%20lending%20platforms%20in%20Kenya.

[56] https://www.reuters.com/article/us-kenya-fintech-insight-idUSKCN1IQ1IP

over-indebtedness, and this trend has been exacerbated by the activities of M-Pesa and fintech companies. Mitheu (2018) insists that the current issues around digital credit, like high interest rates, over-borrowing and imperfect disclosure of terms and conditions, have contributed to increasing the risks toward digital credit borrowers. However, the most serious problem is the increasing loan default rate in Kenya. Kaffenberger et al. (2018) reveal that about 50 percent of digital borrowers in Kenya said that they had not met their dates of repayment on their digital loans, and roughly 12 percent of Kenyans had defaulted on digital credit loans in 2018. In contrast, the bank borrowers' default rate was only 2.2 percent and SACCO borrowers' default rate was only 2.7 percent in 2019 (FSD Kenya, 2019).

The default rates of digital credit are relatively high in comparison to other lending services. This means that small business owners and households using digital credit are exposed to great dangers of defaults. The borrowers could be caught in credit bubbles and be blacklisted by CRB due to only small amounts of debt. Moreover, other than over-indebtedness and high default rates, various consumer risks have been reported such as methods of debt collection and data privacy (Brailovskaya et al., 2021; Owens, 2018). Nonetheless, as numerous scholars have pointed out, hardly any reviews have taken these problems into account to date.

The major reason why digital credit borrowers are exposed to consumer protection risks could be that there has been no proper regulatory framework to protect consumers from the various risks (Garz et al., 2021). The critics (Mitheu, 2018; Donovan and Park, 2019; Putman et al., 2021) insist that due to a lack of regulations, the majority of digital credit lenders are operating unregulated, which could provoke consumer protection risks. Owen (2018) suggested that self-regulation by the lenders should be firstly considered for reducing consumer protection risks; the associations of lenders need to ensure that their members operate in a responsible way. However, this self-regulation seems to have clear limitations, since in the market where there are vulnerable consumers, profit-seeking lenders think there is

no need to restrain their profit-making activities (Kline and Sadhu, 2011; Persson, 2010).

Profit-seeking digital credit lenders provide products to a group of people who would otherwise be unable to obtain loans. Digital credit is their only option, under the condition that they pay back at a high price. As a result, such borrowers can be exploited by exorbitant interest rates (Mitheu, 2018). Therefore, in order to improve consumer protection and foster the stability of the digital credit industry, digital credit lenders need to subject to particular regulations (Sommer, 2021).

There have been several attempts to set a regulatory framework to control the digital credit lenders. The Central Bank of Kenya (CBK) tried to enact the CBK Amendment Bill, and it was finally approved by the Parliament of Kenya on 7th December 2021[57]. CBK Amendment bill 2021 (CBKB 2021) has the purpose of ensuring that CBK has the authority to license the digital credit lenders. However, it is not clear that the newly adopted bill could really contribute to reducing the risks which digital credit borrowers have faced. In order for the bill to control the behaviours of digital credit lenders well enough, it is necessary to closely understand what kinds of risks from digital credit have actually threatened the borrowers' livelihoods and wellbeing. However, there are few studies providing empirical evidence about the consumer protection risks of digital credit in the Kenyan context. Evidence Gap Map (EGM) conducted by The Mastercard Foundation collaboration for Finance in a Digital Africa (FIDA), which provides the user with an overview of the literature on the effect of digital financial services, including digital credit, reveals that there are few articles focusing on consumer protection in relation to digital credit[58]. It is necessary to examine what kinds of risks the borrowers have struggled with in devising appropriate regulations. Also, there is a lack of studies about how well the current regulatory framework protects

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[57] The press announcement is released by the CBK like below:
https://www.centralbank.go.ke/uploads/press_releases/139697899_Press%20Release%20-%20Enactment%20of%20the%20Law%20to%20Regulate%20Digital%20Lenders.pdf
[58] https://egm.financedigitalafrica.org/

customers from risks. Some grey literature and blog articles (Centurion Plus, 2022; Mbaluto and Mutua, 2022; Mulika et al., 2022) give cursory insights into current regulations on digital credit (i.e. the CBKB 2021), but they do not include in-depth understanding of the risks that the borrowers have struggled with in their real lives and they only touch on the basic features of the Amendment Bill.

Therefore, this study firstly aims to explore the risks that could affect consumer protection when borrowers use digital credit. Clarifying the risks will serve as a foundation for establishing a proper regulatory framework to protect customers. The second purpose of this study is to evaluate the current status of the new regulatory framework to see where the customer can already be better protected. The paper wants to look at how current regulatory policies, based on the CBKB 2021, would work to mitigate the risks of consumer protection in Kenya, and to identify the gaps which mean the current Kenyan regulatory system cannot protect consumers properly. The main goal of this study is to give insights for Kenya and LMICs, where various consumer protection risks of digital credit exist, to develop a regulatory framework in light of the Kenyan case.

4.2 Literature Review

4.2.1 Consumer protection in financial markets in low-and middle-income countries

Responsible finance received a lot of attention after the global financial crisis in 2007, as the repercussions from unethical financial activities and financial products in the United States and other developed economies impacted global finance (Schoen, 2017). The failures of consumer protection in the financial sector have been one of the facilitators provoking economic crisis (Melecky and Rutledge, 2011). Therefore, consumer protection is spotlighted as a significant issue in maintaining stable and efficient markets (Brix et al., 2010). Especially, the consumer protection issues caused by financial market failure could be more harmful for vulnerable

populations than the middle or upper classes. Vulnerable populations are more exposed to the risks related to consumer protection issues (Rutledge, 2010). Not only are low-income customers more exposed to the side effects of market failure, but also less able to protect themselves due to lack of knowledge and financial power (Brix et al., 2010).

Therefore, consumer protection problems were raised not just in HICs, but also in LMICs where many individuals are impoverished, notably in microfinance environments (Ghate, 2007; Sane and Thomas, 2013). Micro-credit provided by microfinance institutions (MFIs) was one of the alternatives to provide loan services to the people who had been excluded from financial services in LMICs (Hulme and Mosley, 1996; Kimenyi, 1997). MFIs at first aimed to enhance the access to loans by accessing the population excluded from formal financial services (Yunus, 2004). While extending the breadth and depth of distribution was clearly central to microfinance's mission of making an impact on poverty through financial inclusion, the issue of consumer protection within microfinance was also raised (Addae-Korankye, 2014; Mensah. 2013; Sane and Thomas, 2013).

The biggest problem that the microfinance industry faced was over-indebtedness (Addae-Korankye, 2014). While microfinance opened up new opportunities for financially excluded populations to start their own businesses, many were unable to generate sufficient revenue. Local economies already saturated with the simple and un-innovative products produced by existing informal SMEs were even experiencing high entry of new SMEs funded by microfinance. This inevitably brought over low revenue of SMEs and equally high rates of exit (Bateman, 2010; McKenzie and Paffhausen, 2017; Page and Söderbom, 2012). This unproductive business cycle resulted in few jobs and income creation and wastage of financial resources from MFIs (Bateman, 2022), eventually leading to over-indebtedness and loan defaults among SMEs. The default rates among MFIs were substantially greater than that of commercial banks. According to the research by Kiraka et al. (2015), the default rates of MFIs ranged from 10 to 20 percent, whereas commercial

banks have a default rate of less than 5 percent. This market structure of easy access and exit eventually led digital credit lenders to focus on providing short-term loans for temporary consumption rather than investing in new start-ups or existing companies for long-term profitability.

Also, it is argued that the increase in interest rates was major problem of microfinance loans. Olomola (2001) noted that the high interest rates of MFIs can significantly increase borrowing transaction costs and can also adversely affect repayment performance. Also, various papers confirmed that the high interest rates of the micro-credit industry eventually contributed to defaults by borrowers (Balogun and Alimi, 1988; Okpugie, 2009; Vandel, 1993). The high interest rate increased the repayment burden for microfinance users, which increased the likelihood that users would more easily fall into a debt trap and default (Ghate, 2007; Sane and Thomas, 2013).

In addition to those issues, coercive collection practices of MFIs have also been a critical consumer protection issue. Simeyo et al. (2013) demonstrated that an MFI was market-sustained when their proper debt collection mechanism was successfully organised. It was also shown that an effective debt collection procedure has a beneficial association with an institution's viability (Adongo and Stork, 2006; Bankowska, 2010). However, various unfair behaviours during debt collection have been revealed in spite of the significance of effective debt collection. According to the research done by Ghate (2007), the respondents in the Krishna MFI were struggling with joint liability[59], compulsory attendance at meetings, joint fines and keeping all members waiting until repayments, which are the methods of MFIs for ensuring a full repayment. According to the MFI borrowers, not only those difficult requirements were mentioned, but they also experienced more aggressive and inappropriate debt collection methods by MFIs: charging overdue money against the security deposit, having the weekly meeting in front of the defaulter's house, MFI employees sitting in front of a defaulter's door, violent language used by group

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[59] Joint liability indicates the group paying on behalf of the defaulter.

leaders or staff, and posting a loan overdue notice in front of a defaulter's house. Even several suicides have been reported in India, with the excruciating pressure placed by debt collectors perhaps being the cause (Chen et al., 2010). The above debt collection methods are serious problems that infringe consumer rights.

In the newly formed digital credit industry, like in the microfinance environment, consumer protection issues have also been raised. The experts (Greenacre, 2020; Mitheu, 2018; Mazer and McKee, 2017; Putman et al., 2021) point out that similar issues related to consumer protection, like high interest rates and unfair debt collection methods, have appeared in the digital credit industry. The high interest rate of digital credit is a big problem, and a constantly mentioned issue (Mitheu, 2018). Unfair debt collection is also being discussed as a point of infringement of consumer rights (Brailovskaya et al., 2021). In the next section, I will look in detail at the current academic discussions related to consumer protection in the digital credit market in Kenya.

4.2.2 Consumer protection issues in the Kenyan digital credit industry

After the adoption of M-Pesa, the largest mobile money service in Kenya, the number of customers using mobile money transfer service increased to 35 million in 2021, according to the Kenya National Bureau of Statistics[60]. This is a tremendous success, given that Kenya has a population of 56 million[61] and an adult population of 30 million over the age of 18. Therefore, the financial service providers have been concerned with expanding their service lines, particularly lending services, for seeking further profits. In 2012, they launched digital credit, a new portfolio for delivering lending services to its existing mobile money customers. Digital credit,

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[60] https://africa.businessinsider.com/local/markets/kenyas-mobile-money-transactions-surge-by-63-in-2021-report/tmkw1rn#:~:text=According%20to%20the%20Kenya%20National,32%20million%20to%2035%20million.

[61] https://www.worldometers.info/world-population/kenya-population/

operated based on mobile devices, provides a straightforward transaction process that allows the borrowers to obtain loans within an hour (Chen and Mazer, 2016). Digital credit gained great popularity like mobile money after its first introduction in 2012. Over six million Kenyans had accessed digital credit after five years in 2017 (Kaffenberger et al., 2018). The first type of digital credit service introduced was a mobile banking loan (MBL) provided by banks and mobile network operators (MNOs). Subsequently many FinTech companies also entered the market and started to provide their own digital credit services, the FinTech loan (FTL). These different types of digital credit services, MBL and FTL, have already been described in more detail in chapter 2.

Problems regarding consumer protection in the Kenyan digital credit industry have recently been raised (Greenacre, 2020; Mitheu, 2018; Putman et al., 2021; Mazer and McKee, 2017). Although there are few studies exploring consumer protection issues in the Kenyan context, among the few, Mitheu (2018) indicates that the main consumer protection problem is over-indebtedness, and various characteristics of digital credit like the high interest rate, over-lending, and lack of disclosure of terms and conditions, could cause over-indebtedness through digital credit. After the economic shock caused by the COVID 19 pandemic, the default rates of digital credit borrowers substantially increased. According to the FinAccess Household Survey (FHS) 2021[62], while on average 10.7 percent of all borrowers had defaulted, this figure was 50.9 percent for MBL borrowers and 46.3 percent for FTL borrowers. These figures are significantly higher than average default rates. The survey results also show that, among more than twelve loan providers[63], the top two loan providers where a majority of respondents mentioned they had defaulted on a loan service were both digital credit services, MBL and FTL. This shows that digital credit borrowers are more vulnerable and likely to default on their loans after

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[62] The survey was made possible through a public–private partnership involving the Central Bank of Kenya (CBK), Kenya National Bureau of Statistics (KNBS) and Financial Sector Deepening Trust (FSD) Kenya.
[63] Banks, SACCO, informal money lender, shopkeeper, etc., are included in the twelve different lenders in Kenya from FHS 2019 and 2021.

external economic shocks. In particular, the fact that the default rate of digital credit is more than 50 percent implies that digital credit borrowers are in a dangerous situation. Over-indebtedness and the COVID 19 pandemic are aggravating social reproduction concerns that will ultimately impede progress towards sustainable development (Brickell et al., 2020).

There have also been a number of news reports on exploitative debt collection practices in Asia and Africa including Kenya (Brailovskaya et al., 2021). In India, it has been revealed that unlicensed FTL lenders are strongly engaged in predatory lending and aggressive debt collection[64]. Also, in Kenya, the problems with improper debt collection have been reported several times in the news[65]. The biggest problem was that when a borrower did not pay back digital credit, he or she got endless phone calls, and debt collectors even called their acquaintances around them. Some even said they had been threatened with death if they did not repay. However, few studies have systematically empirically examined what kind of unethical debt collection behaviours there have been.

Though significant consumer protection problems have become visible in the digital credit environment, the digital credit industry in Kenya has grown significantly without a proper regulatory framework that ensures consumer protection (Mitheu, 2018). Although digital borrowers in Kenya have accused digital lenders of predatory practices like high interest rates, aggressive debt collection and personal data abuse (Brailovskaya et al., 2021; Owens, 2018), there have until recently been no formal regulations that have sought to control digital credit lenders (Akram, 2020; Brailovskaya et al., 2022). Therefore, it is claimed that the Kenyan government needs to set up regulations and financial policies that ensure consumer protection and also promote the efficiency and fairness of markets (Brailovskaya et al., 2021).

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[64] https://indianexpress.com/article/opinion/digital-lending-loan-apps-rbi-banks-7151613/
[65] There were various news announcing the improper debt collection behaviours by digital lenders. See below links for checking the news.
https://www.bbc.com/news/world-africa-57985667

There is, however, an argument against creating strict regulations, which insists that there could be a stifling effect on innovation within the digital credit sector (Didenko, 2017). For example, other national governments like Nigeria and India have already set regulations for controlling digital credit lenders, but the digital credit sectors in these countries have not been as prosperous as the one in Kenya. Nigeria's digital credit sector for example is not as well developed as Kenya's digital credit sector because the Nigerian government has set strict regulations for protecting consumers from the adverse effects of digital credit operations (Muli, 2020). This is an example of the failure of market development by applying excessive regulations to emerging markets. The well-organized regulatory framework may contribute to consumer protection, but such rules have the possibility to create challenges for financial inclusion (Didenko, 2017; Greenacre, 2020). The regulations could lower the profits of digital credit lenders, so they could lose motivation to operate their business. It may limit their potential capacity to provide for the unbanked and other low-income groups.

Therefore, it could be said that self-regulation by the lenders like a code of conduct could be an alternative method instead of setting regulations. The Digital Lenders Association of Kenya (DLAK) is not only to set standards in the industry and to collaborate with policy makers and other stakeholders, but has also made a Code of Conduct in order to improve responsible operations[66].

However, the option of self-regulation has clear limitations in controlling the lenders. In the case of microfinance, self-regulation could reflect well the perspective of MFI, but it was found that MFIs were barely monitored when there were no proper regulations (Kline and Sadbu, 2011). Also, where there are vulnerable consumers, profit-seeking lenders like digital credit lenders find it difficult to show self-restraint (Persson, 2010), since they could be easily tempted to extract money from borrowers. Therefore, in order to improve consumer protection

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[66] https://www.dlak.co.ke/dlak-code-of-conduct.html

and foster the stability of the digital credit industry, some well-devised regulations are needed to control and monitor digital credit lenders (Sommer, 2021).

Furthermore, Brix and McKee (2010) argue that the regulation for consumer protection is not a direct trade-off or in tension with financial inclusion and the growth of the financial market. According to them, as the level of consumer protection improves, the transparency and efficiency of the market increases, and financial inclusion can eventually increase. Of course, the regulation framework should not be skewed towards a certain regulation objective, but should seek a balance between various regulatory objectives; soundness, guarding systemic risks, competitiveness, consumer protection, and financial inclusion (Stephen, 2010). This balance is important for achieving both goals of a) improving financial inclusion and b) protecting consumers at the same time. However, in the case of the Kenyan digital credit industry, setting up any regulatory framework is the first task before considering balanced regulations, since there have been no specific regulations for the digital credit industry.

4.2.3   The regulatory framework for digital credit in Kenya

In order to set an appropriate regulatory framework for the digital credit environment in Kenya, it is required firstly to constitute and make provisions for a bill for regulating the financial industry, and then this bill should be passed by the Parliament[67]. There are various government agencies that could have the authority to regulate and control the digital financial industry (Muli, 2020). CBK is the main regulator in this area, controlling and monitoring all commercial banks and financial institutions as well as deposit-accepting MFIs (Musau et al., 2022). Communications Authority of Kenya (CAK) also has the potential authority to regulate the digital financial industry in both a direct and indirect way (Muli, 2020). CAK is the agency that principally regulates the telecommunications industry. Its

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[67] https://techweez.com/2021/08/09/central-bank-amendment-bill-2021-signing-kenya/

main aim is to protect and safeguard consumers' interests in relation to the provision of Information and Communications Technology (ICT) services and equipment, so it is responsible for facilitating the development of the ICT sectors that include electronic commerce like digital financial services (Malala, 2018). The Parliament (Members of the Country Assembly) plays an important role in regulating the digital credit industry. The financial regulatory framework may vary depending on whether newly suggested financial regulations are passed by the Parliament (CABRI, 2018).

The first attempt to regulate the digital financial industry in Kenya occurred in 2009. After the launch of mobile money in 2007, CBK at first decided that mobile money services were not banking services, and so did not adopt a heavy regulatory touch so that the services were not tied down by regulations (Mwega, 2014). CBK quickly decided how to regulate mobile money in a lighter way, thereby eliminating confusion about the legal status of the service and under what conditions it could operate (Guild, 2017). After the decision of CBK, mobile money services including mobile transfer and mobile payment have been distributed under a laissez-faire regulatory approach. The regulation made Kenya and other countries that followed the 'Kenyan model' fertile territory for the mobile money industry (Burns, 2018; Kimani, 2021).

This loose regulatory environment has continued with the digital credit business, a newer part of the mobile money industry. There were no regulations controlling digital credit lenders until 2021 (Didenko, 2017; Muli, 2020). FinTech companies in particular, who provide FTL, are usually based in the USA, and are not regulated by any rules of CBK or CAK, since they are not classified as financial institutions controlled by CBK. Therefore, they could operate their business activities aggressively without considering the regulations in Kenya. Thus, a number of consumers who are in a vulnerable situation have been exposed to exploitative digital lending services, not being protected by an appropriate financial regulatory framework. For this reason, CBK firstly tried to regulate digital lenders operating in

the country by suggesting a bill – the CBKB 2020[68]. Yet, the submitted bill failed to be passed by the Parliament in 2020[69]. Although the reason why the bill was not passed is unknown, it is reasonable to assume that there were various opposing viewpoints depending on the different stances of stakeholders. According to a report by the Parliament (2021), many lenders opposed the bill which aimed to make the digital credit industry operate based on a license system.

In spite of this opposition to regulation, there was one more attempt to amend the CBKB, and it was finally passed in 2021. It was the first success to begin establishing a regulatory framework for the digital credit industry[70]. The core of the bill is to put the digital credit lenders under the licensing system[71]. Digital credit suppliers must apply for and acquire approval from CBK to operate their business, up until a deadline of September 2022 for the application, according to the amendment bill. Digital credit lenders, that have been freely doing their business without any rules or sanctions, will finally be controlled by the regulations. However, it is unclear whether the newly passed regulations will alleviate the challenges that borrowers are now experiencing. There is a lack of empirical evidence examining whether the bill really reflects the reality of the digital credit environment and the risks that the borrowers are struggling with.

4.3 Framework

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[68] https://www.attorneysafrica.com/2021/04/30/legal-update-on-the-central-bank-of-kenya-amendment-bill-2020/#:~:text=On%2030th%20November%202020,of%20digital%20money%20lending%20services.
[69] https://lawyershub.org/blog/Regulating_Digital_Lending_in_Kenya-Where_CBK_Amendment_Bill_2021_falls_short_31
[70] https://www.businessdailyafrica.com/bd/economy/digital-lenders-have-six-months-to-register-in-new-cbk-rules-3755746
[71] https://africa.businessinsider.com/local/markets/central-bank-of-kenya-issues-new-rules-to-digital-lenders-gives-september-deadline/c17rqbr

In order to examine the issue of consumer protection and the related regulatory system, the problems of consumer protection with respect to digital credit need to be interpreted not just by the logic of the market economy, but also by power dynamics and laws surrounding the industry, since these also affect levels of consumer protection (Elosta, 2010). The consumer protection problems occurring in the digital credit market are not problems simply caused by the failure of digital credit suppliers' loose screening systems for sorting out the risky borrowers who are more likely to default (Putman et al., 2021). The problems also arise due to a combination of factors arising from political issues related to regulation. As found in the literature review, the problem of consumer protection in the Kenyan digital credit industry could have been worsened by a lack of a legal framework (Didenko, 2017; Muli, 2020).

Therefore, to examine the problems of consumer protection in the Kenyan digital credit industry from the perspective of the regulatory framework, I base my conceptual framework on a problem-driven political economy analysis (PEA) approach developed by Fritz et al (2009). PEA entails examining not only the regulatory framework, but also the dynamic interplay of structure, institutions, and stakeholders (IEG, 2016); a far-reaching analysis of the digital credit industry, which can enhance our understanding of the digital credit environment. Among various applications of PEA, I adopt a problem-driven approach. This approach focuses on specific challenges or problems and ultimately aims to find the possible solutions to them. Since this paper will focus on the consumer protection problems arising prominently in the digital credit industry, and suggest possible solutions from a regulatory perspective, I adopt a problem-driven approach suited to my purpose of this analysis.

In sum, I apply a problem-driven PEA to devise a detailed framework for this paper, which is depicted in figure 11. The process of PEA as presented by Fritz et al (2009) consists of four different parts that are sequentially employed for analysis: firstly, identifying the problems to be addressed; secondly, understanding the

political drivers; thirdly, examining the institutional and governance arrangements, and fourthly suggesting recommendations. By using this framework, we can understand the broad and complex nature of consumer protection issues in the Kenyan digital credit environment, and identify different areas of research which are needed for the broad range of the digital credit environment.

Figure 11. The framework of political economy analysis (PEA) applied to the digital credit industry
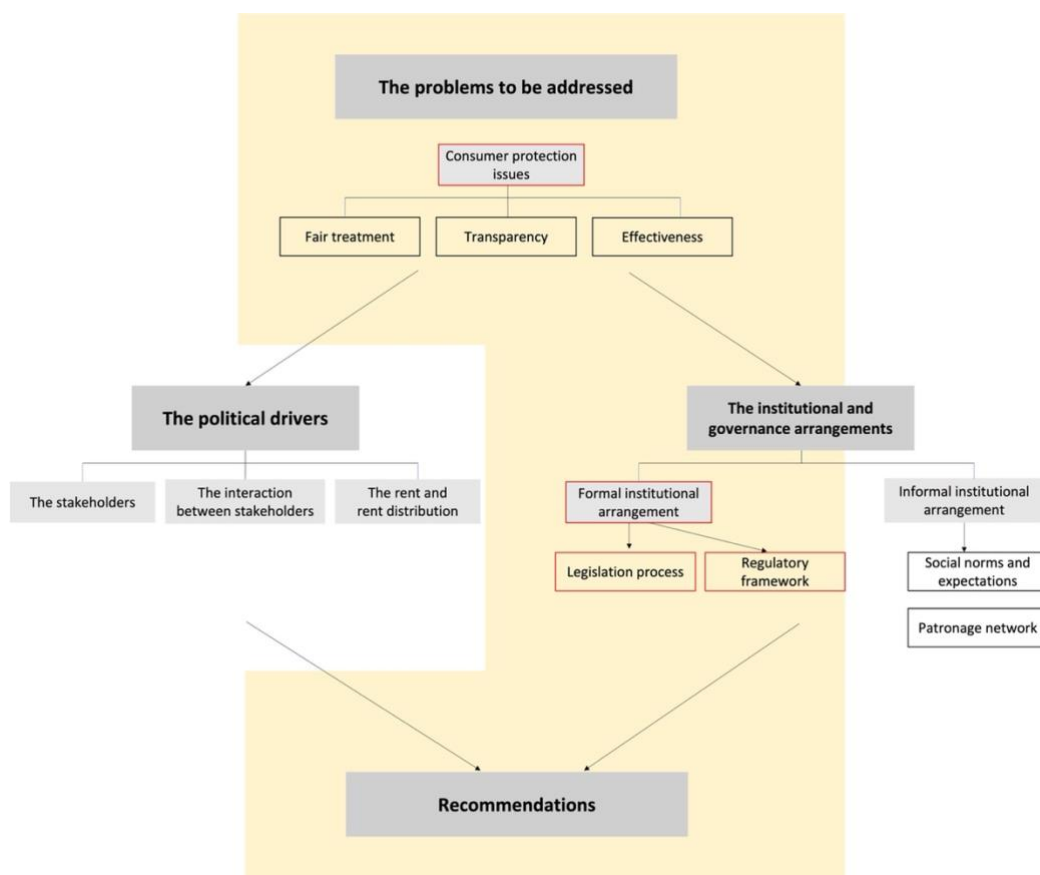
Source: Based on Fritz et al. (2009)

* The shaded area represents the parts of the PEA framework covered by this paper.

The first item in our conceptual framework, as set out in the upper part of figure 11, is to *clarify the problems* prevalent in the digital credit industry. The key problem of interest for us is the issue of a lack of consumer protection in the unregulated digital credit environment in Kenya. To identify the consumer protection problems in the

digital credit industry more thoroughly, it is necessary to examine how well consumer protection goals have been accomplished. Brix and McKee (2010) suggest three aims for achieving a certain level of consumer protection (see at the top of figure 11), which provide criteria to evaluate the status of consumer protection. Three critical aims are needed to be accomplished, as stated, in order to achieve some level of consumer protection. The first criterion is "*fair treatment.*" It includes the themes of how much customers have been fairly treated and how much lenders provide appropriate and harmless financial services. Second, "*transparency*" is a significant indicator in evaluating the level of consumer protection. It is mainly about how much customers clearly know about the product they are using and how much providers disclose information about their products. Lastly, "*Effectiveness*" is also an essential factor in evaluating consumer protection, indicating how many customer complaints are resolved effectively. When examining all of the criteria regarding the three different aims, it will become clear how much consumer protection is sufficiently achieved in each area of aims.

Once the main problems related to consumer protection are identified according to the three aims of consumer protection, the analysis moves to the backbone of this framework, "*the political economy drivers*" and "*the institutional structures and governance arrangements.*" Analysis of the political economy drivers is required because these are the basic components behind the problems of consumer protection in the digital credit industry. As outlined in the middle left half of figure 11, this includes analysing the drivers of socio-economic phenomena in the digital credit industry: 1) stakeholders; 2) the interaction between stakeholders, and; 3) rent and rent distribution, which are the basic components shaping the digital credit environment. Stakeholders are the actors who play different roles in the digital credit market, and they seek their own rent through interaction between various stakeholders. This analysis is the steppingstone to understanding the dynamics of the digital credit environment and the causes of socio-economic phenomena (problems) within it, already discussed in chapter 1, section 1.3 (see figure 5 for example).

I disaggregate the information on political economy drivers in more depth in figure 12, which briefly describes the various stakeholders, their interactions, and rent and distributions. The primary stakeholders are lenders, borrowers, and regulators, and the secondary stakeholders around the digital credit environment are advocacy groups, investors, international organizations and donor agencies (see also figure 5 in section 1.3). The stakeholders have large or small influences on each other while pursuing their own interests.

Figure 12. Political economy drivers of the digital credit environment
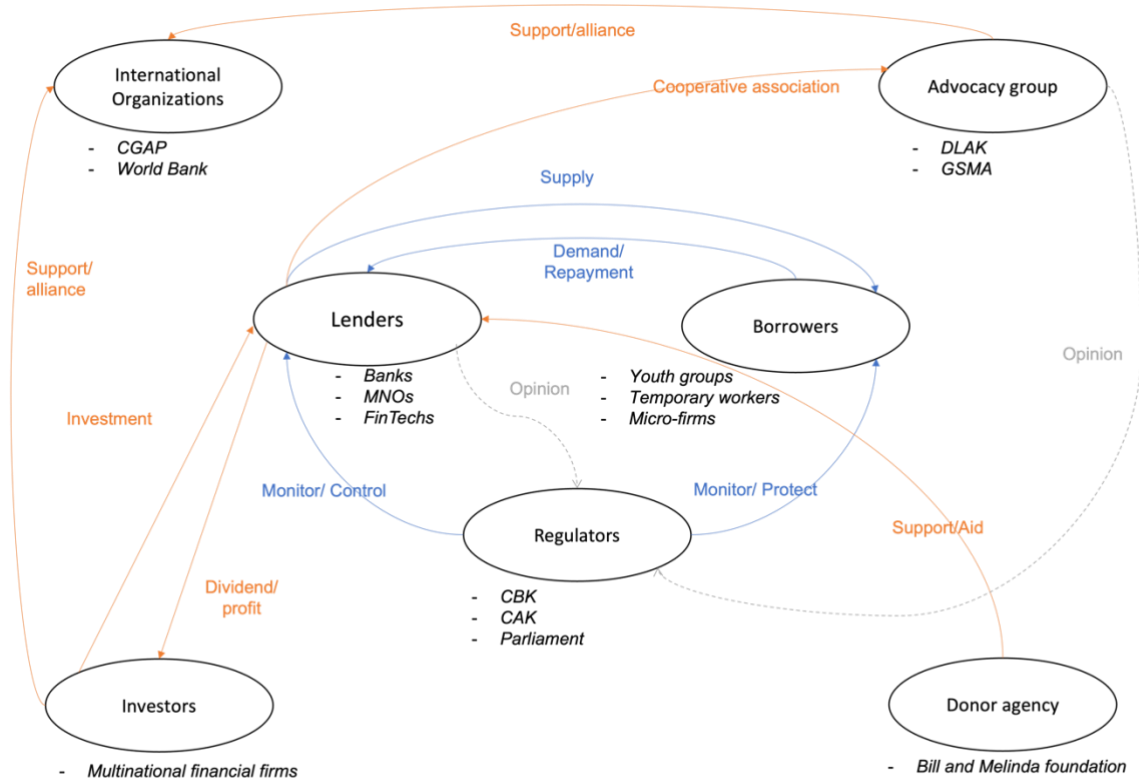
Source: Author's own elaboration

The primary stakeholders indicate those who are directly involved in the operations of the digital credit industry and its legislation. The borrowers are the end-users of the digital credit industry, and the main targets which the regulations aim to protect. These consumers are exposed to the risks existing in the digital credit industry. Digital credit lenders (Banks, MNOs, FinTech firms) are those who

provide digital financial services to customers (Microsave Consulting, 2019). They are the main targets the regulators aim to control. The regulators are the primary actors who have the authority to control the digital financial industry. There are various regulators having potential authority to control the digital credit industry, such as the CBK, the Parliament, or CAK (Mitheu, 2018).

In terms of minor or secondary stakeholders, these indicate those who are not directly involved in the digital credit business and legislation, but they play roles such as a think-tank providing background knowledge about digital credit, or try to influence the legislative process in order to reflect their interests. International organizations like the World Bank and Consultative Group to Assist the Poor (CGAP)[72] usually play a role as a think-tank by performing research concerning topics about digital financial services. Advocacy groups like The Digital Lenders Association of Kenya (DLAK)[73] and The GSM Association (GSMA)[74] are associations of individuals or organizations, usually formally organized, that, on the basis of one or more shared concerns, attempt to influence public policy in their favour.

In chapter 1, section 1.3, the key stakeholders and rent distributions were briefly examined, but the interactions and interplays between the stakeholders remain a grey area and still need to be researched[75]. For example, the investors in FinTech firms, who are usually funded by multi-national financial companies like Visa and Paypal[76], could use their power to influence the Kenyan digital credit market in order to gain additional profits from FinTech companies. They have the possibility to contact government officials to negotiate more market-friendly regulations. As another example, an advocacy association such as DLAK could do a similar thing behind closed doors. This situation could not be captured through a general survey;

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[72] https://www.cgap.org/about
[73] https://www.dlak.co.ke/
[74] https://www.gsma.com/aboutus/
[75] Various papers (Adger et al, 2005; Fritz et al., 2009) argue that the interactions and interplays between various stakeholders are significant in understanding PEA.
[76] https://www.cnbc.com/2021/10/14/tala-fintech-for-unbanked-raises-145-million-for-global-crypto.html

therefore, further analysis is required on the issue of political dynamics behind stakeholder interactions.

Another backbone of PEA analysis is to explore the *institutional structures and governance arrangements* (see Figure 11, right side), which consist of formal and informal institutional structures. The analysis of *formal institutional structure*, which is the main focus of this chapter, focuses on how laws and regulations have been set up, how the body of law is structured, and what the gaps between regulations and the reality are in the digital credit environment. Therefore, this part of the framework would explore the current regulatory framework applied to the digital credit industry. This analysis is critical in evaluating the limitations and gaps of the present law in protecting consumers.

As already stated, the digital credit industry in Kenya has grown without a proper regulatory framework, leading to many digital credit borrowers struggling with various problems (Didenko, 2017; Mitheu, 2018; Muli, 2020; Putman et al., 2021). In order to reduce those consumer protection issues, in 2021 regulations for controlling the digital credit environment were adopted in Kenya – the CBKB 2021. However, there have been few studies examining whether CBKB 2021 is sufficient to reduce the consumer protection risks which borrowers have been facing in reality. Thus, this chapter focuses on evaluating the regulations around the digital credit environment and how much they protect consumers.

An understanding of *informal institutional arrangement* is also required to understand the institutional and governance arrangements. Informal institutions are social norms and activities that have their roots in history and culture (Fritz et al., 2009). Informal institutions—family and kinship relationships, traditions, and social norms— have an important role in shaping policy outcomes, since understanding informal institutions contributes to drawing out weaknesses of government policies and inadequate governance arrangements (De Soysa and Jütting, 2007, pp. 29-43). For example, women still borrow digital credit services not for themselves, but for

their family members or a local group (Kusimba, 2018), which is caused by kinship ties or obligations and social norms.

Through this framework, we can identify what components are significant in understanding the digital credit industry at the angle of consumer protection, and what is missing in current academic studies. In this paper, rather than lightly touching on a wide range of the PEA framework, I especially examine *formal institutional and governance arrangements* among two pillars of analysis, political drivers and institutional and governance arrangements, since I want to delve more deeply into consumer protection issues related to digital credit related laws and legislation. The theme of digital credit regulation has not been well researched (Greenacre, 2020; Mitheu, 2018) despite its significance. This study therefore focuses on the *formal institutional and governance arrangements* which have not been sufficiently examined to date. However, further analysis will be needed on the pillar of *political drivers* and the theme of political dynamics behind stakeholders' interactions.

To summarise, the yellow shaded area of figure 11 shows which aspects of the framework are covered by this chapter. I firstly identify the major problems digital credit borrowers have faced in Kenya from the angle of consumer protection. I then examine formal institutional arrangements. Especially, I will focus on a newly changed feature of formal institutions, which is the recently passed CBKB 2021. This analysis is mainly about how much the recently introduced CBKB 2021 can contribute to improving consumer protection, and is based on data from interviews and a document review. Drawing on my conceptual framework, I can clarify structural problems caused by the absence of laws and regulations in the digital credit market, and see how much the recently passed CBKB 2021 can solve the current consumer protection issues. In section 4.6 I then provide recommendations on consumer protection issues based on the findings from the analysis.

4.4 Methodology

In order to draw out the problems related to consumer protection, and examine the current regulatory system for the digital credit industry, I utilise a qualitative research design with substantive primary research comprising of in-depth semi-structured interviews with 30 digital credit borrowers and 2 key informant interviews (KIIs) with lenders. I also use documentary analysis of policy and regulatory documents published by the government agencies to supplement the primary data from the interviews.

4.4.1   Semi-structured interviews

I conducted semi-structured interviews with 30 interviewees who have used digital credit services, in order to identify the problems that borrowers have been facing when using digital credit (the first step of problem-driven PEA analysis). The 30 semi-structured interviews were conducted from June to August 2021. Before starting an interview, I briefly explained the purpose of the research and made it clear that the responses would only be used for scholarly reasons and that the interviewee's name would be kept confidential. In addition, I asked for informed consent to record and later transcribe the interviews. During each interview, the interviewer took structured notes that included their reactions to the interviewee's comments.

The semi-structured interviews had a six-part protocol (see Annex 6). The first section asks respondents for demographic information. The second section goes into how they used digital credit services, including the categories of digital credit services, size of loan, multiple borrowing, consumption patterns, and so on. The third part attempts to ask about the positive and negative effects of digital credit after using the services. The fourth section asks borrowers if they are aware of consumer protection and data protection regulations. The fifth section is about deceptive advertising and fake lenders. Lastly, I ask borrowers whether they

thought there was a need for regulations to better protect customers. The results from protocol parts 3-6 are mainly used for the analysis of this chapter. The interview transcripts were analysed using NVivo, and I devised a coding structure that identifies various themes from the adoption to the impacts of digital credit.

4.4.2 Key informant interviews

In addition, KIIs with two officers of digital credit lenders were conducted. The purpose of KIIs is to collect information from individuals who have first-hand knowledge about the digital credit industry (USAID, 1996). These experts, with their particular knowledge and understanding on their side, can suggest their opinion towards the issues facing the digital credit industry, and also insights into the nature of any problems. I tried to understand the perspective of digital credit lenders through the KIIs. It enabled me to comprehend the dynamics of the digital credit business in the context of the interdependence of various stakeholders.

I was supposed to have interviews with various officials from MBL and FTL companies, as well as regulators. However, it was not easy to conduct interviews with digital credit lenders, especially officials from FTL, because the reputation of FTL lenders had already been seriously undermined, due to various news media reports and critical remarks[77]. Therefore, the majority of FinTech lenders did not respond to or refused the interview requests in order to avoid further criticism. Thus, this study had no choice but to be satisfied with interviewing two officials from MBL, provided through collaboration between banks and MNOs. The KIIs were face-to-face interviews. They mentioned the factors causing consumer protection problems that are currently occurring in the industry and conveyed their

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[77] There are many news articles criticising FinTech firms. See the below links for examples.
https://www.bbc.com/news/world-africa-57985667
https://www.theafricareport.com/22692/opera-denies-hindenberg-claims-of-predatory-loans-in-nigeria-kenya/
https://www.bloomberg.com/news/features/2020-02-12/tech-startups-are-flooding-kenya-with-apps-offering-high-interest-loans

thoughts on the overall regulatory framework from the standpoint of digital credit providers.

4.4.3   Document analysis

I also utilised document analysis to supplement the interview methods. Document analysis would help complementarity of evidence by the combination of various approaches in the same study (Creswell & Clark, 2007, pp. 8-9). This chapter aims to draw upon multiple sources of evidence, to achieve convergence and verification. The document analysis mainly focused on the two government documents: the "CBKB 2021[78]" and "Report on CBK Amendment Bill 2021[79]". Those documents would contribute to drawing out answers to the question of whether the newly introduced regulations can improve the level of consumer protection, and to understanding the shortcoming within the regulations. Through analysis of CBKB 2021, I evaluate how much CBKB 2021 could reduce consumer protection risks. The Report on the CBK Amendment Bill is also utilised for the analysis for this chapter. It contains the proceedings of the Department Committee on Finance and National Planning on its consideration of the CBKB, and the content about the meetings between regulators, the relevant members of parliament, and ten stakeholders from the lender side with whom I failed to arrange interviews. This second document would therefore be helpful for understanding the voice of lenders and regulators who I could not interview. This aids understanding of the various stances of major stakeholders from regulators to lenders.

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[78] CBKB 2021 is uploaded in CBK website below:
http://www.parliament.go.ke/index.php/node/13766
[79] The full report could be checked below link:
http://www.parliament.go.ke/sites/default/files/2021-08/The%20Central%20Bank%20of%20Kenya%20%28Amendment%29%20Bill%20No.%2010%2C%202021.pdf

4.5 Results

4.5.1 Basic description

This study conducted interviews with people living in Kibera, Soweta, Mukuru, and Mathare, the largest slum areas in Nairobi, to explore questions about digital credit and its effects for vulnerable populations. As mentioned above, consumer protection issues are more harmful for vulnerable populations (Brix et al., 2010), so I decided to conduct the interviews in slum areas where the majority of residents are in vulnerable situations, in order to capture the risks faced by the vulnerable. The 30 interviewees had used digital credit, and of these 12 were male and 18 were female. All were economically active people between the ages of 18 and 60, except for one, who was 61 years old. Eight interviewees were educated to primary education level, 12 were educated up to secondary level, and 8 were educated above that level. In terms of occupations, the majority of them (22) were small business owners running kiosks, beauty salons, tailor shops, butchers, or grocery shops. In addition, seven were casual workers, and only one person was formally employed. These occupations indicate that their income status was unstable, and that their income sources could easily be endangered when faced with an external crisis such as the COVID 19 pandemic.

When asked about their financial behaviour, nine of them said they had used loans with accounts at a bank or SACCO, which are referred to as formal loans, and 17 answered that they had borrowed money only through informal loans like Chama, a shopkeeper, or an informal money lender. These figures indicate that formal loan services were less accessible to the group than informal loan services. There were four people who had never used other loans and had only used digital credit.

Digital credit was the most frequently used loan service, followed by Chama, which was used by 14 out of 30 people. The interviewees had experience of using various types of digital credit services, not using only one digital credit platform. Only two

people said they had used only one type of digital credit service, seven people had used two types, eight people had used three types, four people had used four types, and nine people had used five or more types. This suggests that most borrowers do not stick to using only one service, but use various services at the same time or take turns. A demographic summary of the interviewees can be found in Appendices 5 and 6.

In the next section, the findings reveal what issues related to consumer protection problems have come out through the in-depth interviews, and I evaluate whether the current regulatory system, CBKB 2021, can reduce the side effects of the consumer protection issues. In other words, this study identified several consumer protection issues according to the three main goals for achieving consumer protection as described in our framework – fair treatment, transparency, efficiency – and analysed how much the newly adopted CBKB 2021 can reduce the side effects of those issues. Table 12 below summarises the overall issues identified in the interviews, and the applicable clauses and gaps of the CBKB 2021.

Table 12. Consumer Protection Issues and Applicable Clauses in CBKB 2021

Consumer protection goals	Issues identified in the interviews	Applicable clauses in CBKB 2021	Gaps and risks
Fair treatment	Default and blacklisted	Clause *13. (2)*	Continuous borrowing without repayment (each under 1000 shillings), could burden the lenders
	Inappropriate debt collection	Clause *20. (a), (b), (c)*	Not considering debt collection behaviours causing mental stress, and harassment of acquaintances
	High interest rates	Clause *19. (1) (2) – (a), (b), (c)*	Not mentioning contractual interest rates, only including extra interest rates
	Over-borrowing	No clauses	Gaps and risks exist due to no clauses
	Licensing system	Clause *5. (1), (3)* Clause *8. (1), (4)*	Stifling effects for financial inclusion when adopting licensing system
Transparency	Deceptive marketing	Clause *26. (1) (2) – (a), (b)*	Not considering aggressive marketing tools
	Data Privacy	Clause *9. (1) –(g), (3)* Clause *24.(a),(b),(c),(d),(e),(f)*	No specified sanctions when disobeying the recommendations
Effectiveness	Difficult to contact service provider	Clause *22. (1), (2), (3)*	Need to supplement the clauses that the lenders should inform their resolution system to the borrowers

 Source: Author's own elaboration

4.5.2 Fair treatment

Among various consumer protection problems, this section firstly explains the issue of fair treatment, which is one of the important criteria in achieving consumer protection. It covers the topics of how much the borrowers have been properly treated and lenders have provided adequate financial services. The findings identified various problems related to fair treatment; default/ blacklisted,

inappropriate debt collection behaviours, high interest rates, unlimited lending, and unlicensed lenders negatively impacting consumer protection.

Default and Blacklisted

The critical adverse consequence of utilising digital credit is default. Surprisingly, as many as 24 of the 30 interviewees (80 percent) said that they had had experience of late repayment. In addition, 13 of them answered that they had not only paid late but failed to pay back. It indicates more than 43 percent of them had experienced default when using digital credit. Because the interviews were done with people living in slum areas, these outcomes are likely to be higher than in other areas. This is because they have more possibility than other people to be unable to repay the debts due to their economically vulnerable status. However, it also demonstrates how much digital credit put these poor consumers in risky situations. Initially it is simple for them to obtain the loan for the first time, but after that they struggle to repay the money.

The defaulters were blacklisted by CRB, then they were blocked from using all types of formal financial services. After someone fails to repay the loans, he or she is blacklisted by CRB and cannot access other loans provided by banks, financial institutions, and even other types of digital credit services. Compounding the seriousness of the problem here is that many people are blacklisted even due to a default involving a small amount of money. According to the interviews, people usually borrowed a small amount from digital credit platforms, ranging from Ksh 200 to Ksh 25,000 (equivalent to US$ 2 to US$ 223), as mentioned in chapter 3. However, defaults on these small amounts of money have led the borrowers to be blacklisted. One respondent said that he was not able to repay Ksh 400 (around US$ 3.5) from a digital credit lender, and the company directly forwarded him to CRB. After that, he tried to access other companies to obtain loans but failed to obtain these. He became uncreditworthy due to less than US$ 5. Also, some of the

defaulters were trying to clear their names from the blacklist of CRB, but they mentioned that they did not have any knowledge about how to do this.

The officials of digital credit lenders were taking this situation of high default more seriously. After the COVID 19 pandemic hit the economy, many more consumers started defaulting, and most of all, the country's economic status was declining, so they expected that there would be many more people who would start defaulting. This increase was clearly revealed by the two surveys conducted by the FinAccess Household Survey 2019 and 2021. In 2019, 12 percent of digital credit borrowers defaulted, but the default rate increased dramatically to 51 percent in 2021, as mentioned in chapter 4, section 4.2.2. Defaults on digital credit have, based on this evidence, reached a serious level.

Clause 13. (2) of the CBKB 2021 shows that the CBK has the will to save a number of people who are blacklisted[80]. In the meantime, many people have been blacklisted for just defaults on 10 shillings, but a law has been put in place to prevent this. Individuals who have been blacklisted for small outstanding debts (up to Ksh 1000) can circumvent the difficulties they have encountered under this provision.

However, it should be noted that the bill might endanger lenders, considering the fact that many of the sample accessed multiple digital credit services simultaneously as mentioned in section 4.5.1. Borrowing from multiple channels is already prevalent in Kenyan society. If a borrower does not pay back on one digital credit platform, borrowers can move to another platform and borrow money again without being rapidly being blacklisted. The possible situation that a borrower continues to borrow multiple times without repaying could negatively affect the overall digital credit industry in Kenya where more than 120 digital credit

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[80] Clause 13. (2) A digital credit provider shall not submit to any credit reference bureau any negative credit information of a customer or any other person where the amount related to the credit information does not exceed one thousand shillings (CBK Amendment Bill 2021).

providers exist[81]. The increase in the number of consumers who take out multiple loans and then struggle to repay can put impose great burdens on lenders. Therefore, it is necessary to discuss how to solve this problem in further regulations.

Inappropriate debt collection

Various types of debt collection behaviours that seem illegal were referred to in the interviews. 14 of the respondents, almost half, answered that they constantly received calls and messages from digital credit lenders when they did not pay back the money properly on time. Digital credit lenders tried to contact them by making calls and sending messages on a daily basis. One of the respondents even said the lender contacted her so persistently that she felt like they did not want to give her time to sleep. Most people who got repeated and urging calls expressed that continuous calls and messages made them lose peace of mind. Some of them even switched off their phones in order to avoid the calls and messages. These repeated, urging calls can also be considered a form of harassment. Even worse, the respondents claimed that they had been bullied by digital credit lenders in more severe ways. The issue here was not only contacting a borrower's number, but also calling a borrower's family or acquaintance. The husband, younger brother, friends, and acquaintances might get a reminder call for repayment. One borrower mentioned this experience as below:

> *"They even called my husband (he was my contact person) to tell him that I have not paid and he was furious with me."*

The respondents even stated that digital credit lenders had threatened them. One interviewee said that the lenders called and threatened him that they would send policemen to arrest him. Another interviewee felt scared when the lenders said they would stalk him until he pays, so he had to hide to avoid them. It vindicates the

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[81] https://www.geopoll.com/resources/digital-lending-kenya-dlak/#:~:text=Digital%20lending%2C%20which%20provides%20people,digital%20lending%20platforms%20in%20Kenya.

news announcing improper debt collection methods by digital credit lenders[82], and as with the news stories, among the 30 respondents many had experienced mental health problems due to improper debt collection methods. They mentioned that those types of debt collection measures had made them depressed after they had failed to repay. Three respondents mentioned that they were suffering from insomnia due to the stress.

The officials of MBL also recognized that some aspects of debt collection procedures had been inappropriate. They thought loan recovery tactics like threatening with robocalls and sending messages to relatives, spouses, or friends of defaulters could ruin the reputation of digital credit providers. However, this statement was provided from the perspective of digital credit providers, not considering the rights and interests of consumers. In addition, they argued that aggressive debt collection should be used to reduce the current surge in defaults to some extent. These findings indicate that some lenders have limited intentions to resist illegal debt collection methods.

CBKB 2021 includes clauses 20. (a),(b),(c),(d) and they could abate the inappropriate debt collection behaviours[83]. These clauses are the provisions to protect borrowers who have suffered or might suffer from improper debt collection. However, the problem is that these clauses mainly deal with physical threat when collecting loans. In the case of verbal violence and harassment, the clauses prohibit "use of obscene or profane language" or "improper or unconscionable debt collection tactic, method or conduct", but the bill does not suggest any detailed examples to

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[82] https://www.bbc.com/news/world-africa-57985667

[83] Clause 20. A digital credit provider, its officers, employees or agents shall not in the course of debt collection engage in any of the following conduct against the customer or any other person—
(a) use of threat, or violence or other criminal means to physically harm the person, or his reputation or property;
(b) use of obscene or profane language;
(c) make unauthorized or unsolicited calls or messages to a customer's contacts;
(d) improper or unconscionable debt collection tactic, method or conduct.
(e) any other conduct whose consequence is to harass, oppress, or abuse any person in connection with the collection of a debt (CBK Amendment Bill 2021).

illustrate and strengthen these clauses. It is highly likely that the lenders will claim that their languages and tactics in their debt collection procedure do not fall under the conditions under these clauses. Clear examples for those clauses should have been included in CBKB 2021.

Moreover, it seems that the important points about inappropriate debt collection, that borrowers mentioned in the interviews, even relating to the persistent phone calls, have not yet been accurately covered in the bill, despite clause 20.(c). As mentioned above, the biggest problem of debt collection procedures was the psychological pressure imposed on people. Repeated urging calls, verbal threat, calling family members and sending people directly to collect money are representative harassments of mental bullying. On closer examination, I see that Clause 20. (c), which states lenders cannot make unauthorised or unsolicited calls (see footnote 83), can be circumvented by lenders, and so the bill does not essentially deal with the problem of protecting borrowers from those psychological pressures. For example, according to the bill, the providers should not contact a number that borrowers did not provide (see Clause 20. (c)). However, the providers *could* contact their family members, even though this caused stress or transgressed privacy. This was possible because the interviewees stated that the lenders asked them to enter their family members' names and numbers when signing up. In this case, lenders could contact family members other than a borrower, which is not out of the legal realm because they had already asked for and received the contact numbers of the borrowers' family names and numbers. In order to prevent this situation, the regulation should have stated something different, such as "do not contact anybody other than the parties or their guarantors." As a result, it appears that the present bill tries to protect the consumers, but it has clear limitations to solving the problems of debt collection that borrowers are encountering in reality.

High interest rates

The most serious issue with digital credit products is exorbitant interest rates. Many of the borrowers stated that they thought digital credit was more expensive than

traditional loan services. However, they kept using digital credit services, since it is much easier to access than other loan services, even for financially vulnerable populations (Chen and Mazer, 2016), and they have no other chances to use other loans like banking loans. According to the interviewees, the interest rate on digital credit is too high, ranging from around 7.5 percent to 20 percent per month. These rates are too high for the poor to earn enough money to cover all of the interest incurred by digital credit. It can be said to be an extremely high interest rate compared to banks that provide annual interest rates. It could be argued that it is an appropriate interest rate which corresponds to the risks related to the people who use digital credit. However, the current interest rate is set at a level that is too high for lenders to argue that it is the price of "taking risks."

The officials of digital credit lenders also agreed that the current interest rates are too high. They said the annual percentage rate (APR) for digital credit can sometimes be in excess of 300 percent, in contrast to CBK which regulates the interest rates of commercial banks (Alper et al., 2019)[84]. They were collecting additional amounts from consumers in a clever but not illegal way, naming this amount as facilities fee, not interest rate. The 7.5 percent premium on borrowed money as a "facilitation fee" not as an interest rate. If the latter were determined to be the case, a legal restriction would apply (Donovan & Park, 2019). The officials of mobile banking loans asked rhetorically about high interest rates:

> *"Is this morally right?"*

High interest rates for digital credit derive from lenders cleverly using or exploiting an environment where people find it difficult to borrow money from elsewhere. The respondents even mentioned that many borrowers, who had paid late, experienced an increase in interest. If they failed to repay on time, the lenders added a penalty on top of it. The penalty is sometimes so expensive that it is hard to understand in

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[84] In September 2016, the Central Bank of Kenya (CBK) issued a circular designating the policy rate as the reference rate for purposes of this statute. The CBR was 10.5 percent when the law went into effect, implying a minimum deposit rate of 7.35 percent and a maximum lending rate of 14.5 percent (Alper et al., 2019).

terms of common sense. One respondent had borrowed Ksh 20,000 with an interest rate of Ksh 2,000, so she was supposed to repay a total of Ksh 22,000. However, she had to pay an additional Ksh 400, because she was late by just one day. This was 25 percent of the original interest rate. In some cases, the interest doubles in a day, which is a serious level of usury. One interviewee explained her digital credit situation like this:

> *"If you borrow Ksh 3,500 and you fail to pay, they will give you 24 hours from the borrowing time, and then they will charge you Ksh 35 every day till the day you finish paying. It is a lot higher than other loan services when calculated on a monthly basis, like other digital credit services."*

Especially, people mentioned that digital credit services provided by FinTech companies (e.g. Tala, Branch) (FTL), show critically higher interest rates. They think the interest rates of MBLs like M-Shwari and KCB M-Pesa are moderate at around 7.5 percent per month, but those of FTLs like Tala and Branch are very high at around 15 percent. The case of Cashway is even worse, charging interest rates ranging from 16 to 17 percent each month. One borrower compared the interest rates of MBL and FTL like this:

> *"I muted Tala because of the interest rate it was too high for me. I think Branch and Tala had the highest rates"*

The KIIs with lenders revealed further the reason for the higher interest rates of FTLs. The officials of MBL mentioned FTL lenders borrow capital from international financial markets with promises of high returns, while MBL lenders usually use existing customers' deposits. FTL lenders, therefore, give loans at higher rates in order not only to repay high-cost capital but also to recover high expected non-performing loans as the portfolios are unsecured and many of the borrowers are sub-prime with low CRB credit scores.

The CBKB 2021 is expected to ease this issue on high interest rates for a lot of borrowers struggling with the burden of high interest rates. According to Clause 19.

(2). (b)[85], an excessive collection due to repayment 'delinquency' cannot exceed the principal. This means any extra cost should be set to not exceed the principal, which in turn means that the extra interest rate cap is limited to 100 percent. The bill is meaningful in that it caps the extra interest rate in the event of delinquency at 100 percent.

Yet, there are no clauses to restrict high initial contractual interest rates. The basic reason for late repayment and high defaults is that the interest rate charged at the time of the contract being set up is far higher than that charged by other loan services. As revealed above, borrowers have been vocal about their concerns and problems with high interest rates, since the high contractual interest rates cause repayment problems or default. Thus, the existing law seems to have limits due to its inability to control the contractual interest rate, and only includes clauses about any extra interest rates.

Unlimited lending

In the in-depth interviews with the borrowers, I found that the borrowers excessively relied on digital credit more frequently than the other loans. Access to loans can give chances to develop or recover household economies, but excessive loans can burden household economies. According to the findings by Mensah et al. (2013), loan defaults had a positive relationship with more loans taken out; every 1 percent increase in borrowing leads to a 0.11 percentage increase in loan default rates. This implies that when customers take out additional loans, they are less able

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[85] Clause 19. (1) A digital credit provider shall be limited in what it may recover from a customer with respect to a non-performing loan to the maximum amount under sub-regulation (2).
(2) The maximum amount referred to in sub-regulation (1) is the sum of the following—
(a) the principal owing when the loan becomes non-performing;
(b) interest, in accordance with the contract between the customer and the digital credit provider, not exceeding the principal owing when the loan becomes non-performing; and
(c) expenses incurred in the recovery of any amounts owed by the customer (CBK Amendment Bill 2021).

to repay their small loans simultaneously, leading to an increasing possibility of default. Therefore, it is necessary to avoid excessive borrowing or relying on loans.

However, digital credit lenders had intentionally induced the borrowers to borrow frequently, without a limit on the number of loans. The business strategy of digital credit lenders tempted their borrowers to access loans more and more. Digital credit lenders provide very small amounts of money when a borrower first borrows money, but the more frequently he or she borrows, the higher the credit limit can become. The respondents said that they intentionally borrowed money multiple times to increase their borrowing limit.

> *"When you repay, your limit rises. We love this because when your limit rises, you can borrow more money."*

> *"Even when you pay earlier, they increase the loan limit."*

The data from the interviews showed that the business strategy of digital credit companies could possibility lead borrowers to frequently borrow, and even to fall into over-indebtedness. As already discussed, digital credit users using FinTech firms (FTLs) utilised the service about 27 times per year, in contrast to three time per year for digital credit through a bank (MBLs), or only once per year from banks and SACCO. The gap between FinTech digital credit and other loans is remarkable in terms of the frequency of loans. This frequency is an aspect of digital credit that must be addressed since it is closely related to a high risk of putting digital credit users into an economic crisis.

However, it is not easy for the borrowers to reduce over-borrowing through their own will. Benton et al. (2007) insist that self-control alone eventually fails to control financial behaviours, resulting in excessive borrowing or savings reductions. It means better individual self-regulation is not enough to prevent over-borrowing, and that establishing appropriate policies and regulations is needed to reduce or prevent over-borrowing risks. Yet, I cannot find any provision to regulate unlimited lending in the CBKB 2021. Furthermore, the two officials of digital credit lenders

made no mention of over-borrowing issues during the KIIs, indicating they are unaware of or perhaps do not care about this issue. In fact, over-borrowing benefits lenders, so perhaps this is not at the forefront of their minds in terms of problems. Also, people may think that limiting the number of loans could limit individual rights. However, if the problem of over-lending is not addressed by law, there will be limitations in solving the current high default rate.

Unlicensed lenders

The biggest reason why digital credit lenders could provide products with high-interest rates and collect debt inappropriately before the new CBKB was that there were no regulations and specified regulators to control digital credit lenders. All financial institutions who provide loan services are generally regulated by CBK, but digital credit, a newly emerging loan service, had not been affected by any regulations and was provided in a laissez-faire environment (Mitheu, 2018; Putman et al., 2021). Before the new CBKB 2021, financial institutions stipulated by CBK were required to comply with the laws enacted by CBK, but some digital credit lenders that did not belong to formal institutions were not obliged to comply with the law. This was the biggest reason why borrowers had not been treated properly under the protection of regulations. However, not all digital credit lenders had been in the unregulated area. Banks, providing MBL services, are formal financial institutions authorised by CBK, and all financial products they provided were within the legal domain of CBK. In contrast, since FinTechs were not recognized as financial institutions by CBK, they were free to do digital credit business in Kenya. Therefore, it was required for them to be placed under the auspices of CBK, and the licensing system of the new CBKB 2021 could be the first step to accomplish it.

The need for a licensing system is also because of rogue lenders who have emerged, digging into the gaps the regulations do not cover. Some rogue lenders are stealing people's money in various forms. The most typical case I identified in the interviews was that the fake lenders said that if a potential borrower paid the subscription fee, the lenders would lend as much money as a borrower wants. However, the money

did not come into a borrower's account, and a lender just took away the subscription fee. The interviewees mentioned this sort of situation as below:

> *"There are those who con people, they build their empire out of conning. They said if I pay three hundred and then they would proceed with how they would send the money to me. The attractive thing they suggested was the low interest and the return period was thirty days so you can easily fall for the bait. Then, when you send the money, after that, the line goes off and it is never picked up."*

Therefore, a licensing system is needed to prohibit all these types of predatory or rogue lenders, which would improve the quality of digital credit lenders and how they treat their customers. According to the Report on CBK Amendment Bill, the main purpose of the bill is to adopt a licensing system for the digital credit industry. The detailed Clauses related to licensing are within Clause 5. (1) and (3)[86]. They require every person, who has the intention to undertake a digital credit business to first obtain a license from CBK. It means CBK has the discretion to manage the lenders through their licensing system. In addition, the regulations give a basis for punishing rogue lenders who were illegally engaged in the digital credit business.

In addition, according to Clause 8. (1) and (4), CBK is authorized to be involved in business management of the lenders[87]. If a director, CEO, and major shareholder of a digital credit institution fail to meet the conditions required by CBK, they will not be able to take the position. In addition, CBK will have the right to dismiss those in

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[86] Clause 5. (1) No person shall establish or carry out digital credit business in Kenya or otherwise hold himself out as carrying out digital credit business unless licensed under the Act and these Regulations. (3) Any person who was at the commencement of these Regulations conducting digital credit business within six months of publication of these Regulations.

[87] Clause 8. (1) A person shall not be a director, a chief executive officer or a significant shareholder of a digital credit provider unless the Bank has certified the person as fit and proper in accordance with the criteria set out in the Third Schedule. (4) The Bank may disqualify any director or chief executive officer from holding any office in a digital credit provider if he is determined not to meet the fit and proper criteria or for any other good cause shown.

the above positions if they do not meet the *fit and proper criteria*. This shows that CBK could affect a lender's business operations by being involved in some capacity to affect quite a high-level of human resource management.

This bill can be said to be the cornerstone of thinning out companies that have been operating businesses without any restrictions so that only transparent and sound companies can operate in digital credit markets. Of course, according to The Report on CBKB 2021[88], which includes the content about the consultation with the lenders, several officials from the lender side have expressed opposition to the bill during the round table discussion, arguing that the digital credit industry could stagnate and that the regulations could have a negative impact on the industry. They argue that if the licensing system is applied to the market, new companies will no longer enter the market, and competition will weaken, resulting in unfavourable results for consumers. It is a similar argument made by advocates about strict rules shrinking the market size and financial access (Didenko, 2017; Greenacre, 2020). However, it is necessary to closely examine whether the adverse effects on financial inclusion will outweigh the benefits of improving the level of consumer protection.

4.5.3   Transparency

This section discusses the consumer protection issues relating to transparency as the second criterion of consumer protection goals. This part evaluates how much digital credit borrowers can use the service in a transparent environment. Through semi-structured interviews, I identify difficulties caused by deceptive and aggressive marketing, and by infringements of data privacy, and analyse the provisions in the CBKB 2021 accordingly.

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[88] http://www.parliament.go.ke/sites/default/files/2021-08/The%20Central%20Bank%20of%20Kenya%20%28Amendment%29%20Bill%20No.%2010%2C%202021.pdf

Deceptive and aggressive marketing

Deceptive marketing conducted by digital credit lenders is one of the biggest obstacles to achieving transparency in the digital credit industry. Through the interviews, I confirmed that digital credit lenders have been aggressively advertising their loan services. When I asked the interviewees if they had ever received advertising texts for digital credit, 20 out of 30 respondents said they had received texts advertising digital credit. Many of the interviewees said that they had received advertising text messages from various digital credit platforms, not just one digital credit service. Such advertisements can be interpreted as aggressive, in that they are unsolicited and are tempting people to use digital credit more and more. Talking about the advertisements, one of the respondents described them as follows:

> *"These advertisements, especially the Safaricom posters, were very attractive, splendid. You could see yourself actually getting the loan."*

The advertisements did not just contain a description of digital credit, but also contained exaggerated content that could be misleading. For example, Branch promote themselves with the slogan of "*Fuelling a world of opportunity*" on the website, and also put the statement that "*We offer mobile financial services across emerging markets to spur human potential."*[89]. This can be seen as an advertisement of misinformation that attracts the attention of poor customers. The newly adopted CBKB clarifies that the CBK can regulate false advertising through Clause 26. (1) and (2)[90]. According to these clauses, exaggerated and false advertisements for digital credit are expected to be restricted.

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[89] https://branch.co/

[90] Clause 26. (1) A digital credit provider shall ensure that any advertisement that it publishes or authorizes does not include any false, misleading or deceptive representation, or is otherwise misleading or deceptive. (2) Without prejudice to the generality of sub-regulation (1) a false, misleading or deceptive representation includes—

However, it is necessary to deal with not only the content of false and exaggerated advertisements, but also the aggressive advertising of digital credit providers which is a more common problem in the digital credit environment across Kenya. As mentioned in the previous passage, most interviewees stated that they have received SMS messages with digital credit promotions, and did not just get these texts once, but several times from various lenders. This tempted them to continue to use digital credit after looking at the advertising. This process is also likely to have leaked the consumer's information somewhere without the consumer's consent, so that other lenders could then text them. Thus although the regulations cover false or exaggerated advertisements, the biggest problem with digital credit companies is that they constantly send advertisements to people at random to lure them. Therefore, further regulations which limit these constant advertising text messages seem to be needed.

The Infringement of Data Privacy

The infringement of data privacy is regarded as one of the critical issues in the digital credit environment. Our findings also reveal this issue of data privacy infringement, and that this can also be exacerbated by consumer ignorance. When interviewees were asked whether a lender asks them to give permission to access their personal data, among the 27 respondents who answered this question, 11 people, about 40 percent, stated "No". In those cases, it is likely that they were not able to remember the question because they did not pay much attention to the issue of providing personal information; but in fact the digital credit lenders had asked for access to personal information. Above all, a number of people did not understand why the lenders were trying to take their personal information.

(a) a representation that the provision of the credit has an approval, benefits or qualities that it does not in fact have;

(b) a representation that the digital credit provider has an approval, status, affiliation or connection that it does not in fact have.

"I don't know why they take personal information. I just submitted it without any knowledge."

The sections related to data protection issues in the CBKB 2021 are placed on Clause 24 of the bill, under the title "Customer information"[91]. According to these provisions, digital credit lenders must clearly provide information about the digital credit service they provide, and further they have the responsibility to educate the borrowers about the importance of data protection. I met borrowers who were struggling with loans which had been taken out in their name but without their knowledge; their passwords had been disclosed to people and acquaintances close to them, who had borrowed money secretly with their passwords. This shows the importance of data privacy and the knowledge about data protection. The provisions in Clause 24 seem to show that CBK is aware of the problem of protection of consumer information and has the will to solve it. However, the problem is that they are just recommendations and do not mention the sanctions that will occur if the lenders do not observe the recommendations.

However, there is also the possibility that digital credit lenders did not ask the borrowers for permission to acquire personal information, since there was no clear guidance on data collection. During the KIIs, the officials of digital credit lenders mentioned that there is a risk that digital lenders do not comply with rules about acquisition, usage, or sharing of borrowers' data. They even mentioned that some digital lenders have been accused of breaking data privacy principles. For example, some digital credit lenders acquired private information including the contact

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[91] Clause 24. A digital credit provider shall:

(b) ensure that any information given to a consumer on among other things benefits, prices, risks and the terms and conditions, whether in writing, electronically or orally, is fair, clear and transparent.

(f) educate its customers on its services and products, and in particular, make its customers aware of the need to keep their personal details and information such as Personal Identification Number (PIN) secure.

information of borrowers' friends and family numbers[92], and this information was used for improper debt collection methods as described in section 4.5.2.

In order to prohibit this infringement of data privacy when collecting data, the new bill has put the emphasis on data collection by including Clause 9. (1) and (3)[93]. Under those provisions, CBK demands that digital credit lenders should follow all content of the Data Protection Act and the Consumer Protection Act. If lenders illegally obtain a borrower's personal information when registering, or arbitrarily provide his or her personal information to a third party without consent, CBK may suspend or revoke the license.

4.5.4   Effectiveness

The third aim of consumer protection, effectiveness, is closely related to the consumer complaints resolution system. To improve effectiveness, consumer complaints should be well handled and resolved quickly, but I found that consumer complaints during the use of digital credit were not resolved smoothly.

Difficult to contact service providers

According to the findings from the interviews, the main consumer complaints about digital credit are caused by the unstable systems. The interviewees mentioned that they have experienced technical problems or inconveniences when using digital credit services. In particular, network instability was the most frequently mentioned problem by those who had difficulties using FTL. Also, there were problems related to difficulties installing and registering the service for the first time, due to unstable networks, or delays with processing a transaction (took more than a day). In more

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[92] https://www.businessdailyafrica.com/bd/economy/digital-lenders-under-probe-sharing-defaulters-data-3613676

[93] Clause 9. (1) The Bank may, suspend or revoke a licence of a digital credit provider, if the licensee – (g) is in breach of subsection (3) or the conditions of the Data Protection Act or the Consumer Protection Act;

severe cases, the network went down during a transaction and the borrowers lost money.

When the borrowers faced those technical issues, many of them did not know how to handle them. 13 out of 30 respondents, about half of them, had such difficulties with digital credit systems, but only six, less than half, formally contacted their suppliers to solve the problem. This means that many respondents were unaware of the existence of the service centre or how to handle the problems. Those who did not contact the service centre usually asked their acquaintances for solutions or they did nothing to solve the problem. This shows that consumers have not accessed appropriate solutions to problems occurring during use. In many cases, even those who contacted the service centre did not properly get help in solving the problem. The interviewees said the officials of the service centres would solve it if they waited, but there were many cases where they had to contact them again because there was no feedback. This shows that the resolution system of digital credit is not operating efficiently.

The newly adopted CBKB 2021 also mentions complaint and resolution systems in Clause 22 (1), (2) and (3)[94]. It encourages digital credit providers to establish consumer complaint resolution mechanisms. However, as mentioned earlier, the most problematic thing was not that digital credit providers did not establish mechanisms, but that consumers were unaware of the system through which they can complain or did not know how to use and access it. Therefore, a clause referring to how the service provider must announce and inform the consumer about a resolution system, and how to access and use it, is needed to be included in future regulations.

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[94] Clause 22. (1) A digital credit provider shall establish a complaints redress mechanism, including a channel for communicating customer complaints, and shall ensure proper communication of this mechanism to its customers. (2) A customer complaint shall be addressed within thirty days of a customer reporting a complaint to a digital credit provider. (3) A digital credit provider shall keep a record of all complaints lodged by customers and the outcome of their resolution.

4.6 Discussion and policy recommendation

Through the above analysis, I explored how much digital credit consumers are struggling with consumer protection problems, and how much current regulations could reduce the negative effects of the problems. The findings from the interviews confirmed that various problems have infringed consumer protection among digital credit users. The findings show that consumer protection problems related to "fair treatment" are more multi-faceted and perhaps widespread than problems relating to "transparency" and "effectiveness", as seen in table 12. In terms of fair treatment, the borrowers faced high repayment burdens and pressures to repay due to significantly higher interest rates than those charged by other loan services. The high interest rates of digital credit cannot be justified with the argument that they are a reasonable price reflecting risks; rather, they are close to a predatory and exploitative price when converted into an annual interest rate.

Another significant problem related to fair treatment is the unlimited lending issue. The business strategy of seducing people to borrow unlimited times has made the borrowers more likely to default and become blacklisted. The problem does not end here. It was also found that the use of psychological pressure was severe during the debt collection procedure after default, causing mental health issues. The study confirmed that a big reason for the unfair treatments identified was because of a lack of licensing and regulation before the CBKB 2021, and also that a number of unlicensed lenders exist in the digital credit industry. This limited regulatory framework enabled unlicensed lenders to provide products that could harm consumers. This shows that consumers had not been properly treated or protected, from the use of digital credit to the repayment.

In addition, this study found that there are also problems related to transparency, which is important in achieving the goals of consumer protection in the digital credit industry. Both data privacy infringing behaviours and deceptive marketing negatively affected the transparent operation of digital credit. Problems related to the efficiency of responding to consumer complaints also exists. However, I found

that problems related to transparency and efficiency are less severe for consumers than those related to unfair treatment.

To resolve these issues, the newly introduced CBKB 2021 adopts a license system to bring digital credit lenders, who have been in a shadow area, into the legal domain, and it includes provisions which seek to solve problems which digital credit borrowers might be facing. However, in some areas the bill seems to fail in achieving the goals of consumer protection. First, even if CBKB 2021 contains clauses to reduce some consumer protection risks, it lacked sufficient information to inform it about some of the risks that I found in the interviews, and so lacks certain clauses. For example, regarding high-interest rates, there is the clause to regulate extra interest rates related to repayment 'delinquency', but there is no mention of how to regulate original contractual interest rates. The most important part is missing.

Second, some clauses of the bill could put both borrowers and lenders even more at risk. In particular, the clause of the bill in section 13. (2), where the borrowers would not be placed on the blacklist if they had borrowed less than Ksh 1000, can encourage small-scale borrowers to avoid repaying loans. More people who do not pay off their loans will inevitably lead to a financial crisis for lenders.

Lastly, the bill seems to fail to reflect the reality of digital credit outcomes for people's lives to some extent. For example, the unlimited lending can adversely affect consumers' economic life, but this is not covered by the bill at all. The bill does not include any clauses about limiting borrowing. Since the unlimited lending problem was found in the interviews to be closely related to high default rates, it is a must-solve issue not only for improving consumer rights, but also for helping lenders who have to achieve lower default rates for business sustainability. Therefore, it is required to include the clauses related to those issues. The findings from this research show that the newly created regulation needs to be supplemented or revised in the future in a way that can alleviate the identified consumer protection problems properly.

However, what I want to emphasise here is that a simple supplementation and revision of the law are not enough to solve the current problems of consumer protection. Another important strategy to improve levels of consumer protection is to raise consumer awareness. As found in the results, the low level of consumer awareness has amplified the causes and effects of consumer protection problems. The reason why there were not many issues related to "transparency" and "effectiveness" in the interviews, for example, was not simply because there are few problems with those themes, but also because the level of consumer awareness on finance is relatively low. It is difficult to recognise the problems related to the transparency of financial products and the efficiency of the system of complaints without a certain level of financial knowledge. For example, although one of the important issues related to transparency was that of unclear disclosure of terms and conditions to consumers, I found that the respondents did not have any knowledge about terms and conditions of loan services. They just adopted the loans without understanding the terms and conditions of the services. This shows that the problem can be not only solved by suppliers clearly disclosing terms and conditions, but also by increasing consumer awareness and financial knowledge so that they could recognise the need for understanding the terms and conditions of digital credit services.

The same problem was found with the issue of data privacy. Protecting consumers' private information is one of the key criteria for achieving transparency, but in fact, digital credit lenders often sell consumer information in Kenya. However, many borrowers were unaware of the significance of data protection. As mentioned above, nearly 40 percent of interviewees were not aware of the fact that the lender asked them to get personal information when signing up. Also, there was no one who mentioned the risk of data privacy and the leakage of their personal information during the interviews. In terms of the problems related to effectiveness of the complaints resolution system, the borrowers also seem to lack the background knowledge to resolve their inconveniences and even do not feel it is a problem. Ultimately this means that the consumer protection problems within

digital credit can be solved by regulations on the one hand, and by improving consumer awareness and financial knowledge on the other.

4.7 Conclusion

In spite of the high expectations about the impact of digital credit for financial inclusion and economic development, digital credit borrowers are instead struggling with various consumer protection issues. The study found that digital credit services treat consumers unfairly and cause them to get into financial troubles. Consumers have suffered from exorbitant interest rates, aggressive business strategies, and unlicensed lenders. There are also inappropriate debt collections methods used by the credit suppliers after late repayment. In addition, there are problems with the transparency of the service due to the infringement of data privacy and deceptive marketing. Also, there is a lack of effetive consumer complaints resolution systems. In order to solve these problems, the CBK has set the new regulations CBKB 2021 as a first attempt to regulate digital credit lenders. However, it seems that the regulation is not sufficient to reduce many of the risks for consumer protection problems. In addition, some regulations could put both borrowers and lenders in a more risky situation.

This paper was able to highlight several gaps in the current Kenyan regulatory system which mean consumers are not protected properly. Therefore, the findings from this study could give insights for the Kenyan government and regulators who prepare to develop the current regulatory framework in a better way. Also, it could be helpful for policymakers and regulators in other LMICs, where various consumer protection risks in the digital credit sector also exist.

5. Overall Conclusions

5.1 Summary of thesis

Through digital credit, it has been anticipated that the financially excluded population would be able to access loan services whenever and wherever they wanted. This would contribute to increased financial inclusion and, subsequently, promote economic development (Durai and Stella, 2019; Hwang and Tellez, 2016), since borrowers can utilise the loans from digital credit to solve their liquidity issues and invest in their businesses (Kaffenberger and Totolo, 2018). However, except for a few studies, there is still a lack of evidence on whether digital credit has contributed to expanding financial inclusion and economic development. This study sought to contribute to this evidence by assessing the effects and effectiveness of digital credit for households in Kenya from various angles. I mainly focused on aspects of digital credit where there have been concerns, such as over-borrowing, over-indebtedness and defaulting on loans, as opposed to the more positive beliefs which people usually pay attention to such as the spread of digital credit contributing towards the goal of financial inclusion and economic growth.

First, I focused on whether digital credit was disseminated to the vulnerable and achieved improvements in terms of financial inclusion. Chapter 2 examined whether digital credit was actually used by the financially vulnerable, as has been expected. It sought to assess the general opinion of digital credit lenders, advocacy groups, and some international organisations that digital credit would contribute to financial inclusion. The results of this study have shown that two different products of digital credit, MBL and FTL, achieved different degrees of financial inclusion. It is noteworthy that the rural residents, previously excluded from conventional loan services, could access both types of digital credit services just like urban residents. For the case of FTL, it was also found that FTL was generally used by groups such as women and low-income groups considered financially vulnerable. However, in the case of MBL, like the existing formal loans, it was found that MBL was less

frequently used by women and low-income populations. And above all, the level of education seemed to still act as a barrier in the use of both types of digital credit services. The results of this part have shown that digital credit provided an opportunity to the financially vulnerable to some extent, depending on the types of digital credit, but the services did not reach the vulnerable as fully as expected.

Digital credit services could contribute to expanding financial inclusion, but does this necessarily lead to good results? Offering credit to someone who does not have enough resources to repay is dangerous for the borrowers' household economy. In the case of FTL, which has very high interest rates, the borrowers would be more burdened if they borrow more. FTL is more accessible compared to other loans including MBL and spearheads the growth in financial inclusion, thus it induces people to get into a continuous cycle of borrowing. In this case, it implies achieving that financial inclusion does not simply lead to good results.

Here, I began to focus on the side-effects of digital credit, questioning the unfounded belief about the positive effects of digital credit. The most serious issue raised in the Kenyan digital credit industry is the higher default rates of the borrowers. The second analysis, chapter 3, started with the question of why digital credit borrowers are more likely to default than borrowers using other loans, and mainly attempted to find out the causes of the high default rate for digital credit; whether it was mainly because the financially vulnerable groups themselves used it, or whether features of digital credit itself caused the problems.

According to the analysis, financial behaviours and borrower characteristics have less of an impact on the possibility of default than digital credit has itself. This means that using digital credit itself can cause the greatest risk of default. Qualitative research revealed that digital credit was characterised by concerning features such as high interest rates, short terms of repayment, and inducement to encourage over-borrowing, which could make users of digital credit vulnerable to default more frequently.

The influence of borrowers' characteristics on the possibility of defaults was minimal. My findings refute the idea that poor consumers are mostly to blame for the high default rate (Oke et al., 2007). Contrary to expectations, it was found that borrowers' demographic or economic traits did not significantly affect the likelihood of default. Individual characteristics did not correlate with the default rate; household income, age, and the number of dependents appear not to be associated to the default rate at all. The exceptions were the number of household members and education level, which did affect default rates to some extent.

Not only the use of digital credit, but also the frequency of borrowing was found to affect the possibility of default: the likelihood of default increases with the frequency of borrowing. It is interesting to note that, due to the features of digital credit that encourage individuals to borrow more and more, the borrowers of digital credit access loans more frequently than other borrowers of traditional loan services. The findings of chapter 3 show that the argument that the demographic and economic characteristics of people using digital credit have increased the default rate is incorrect to some extent, but rather support the opinion that digital credit itself has the possibility to ruin the household economy, and even lead to defaults (Izaguirre et al., 2018; Kaffenberger et al., 2018)

The last study, chapter 4, examined the consumer protection problems that borrowers are facing in the Kenyan digital credit markets where many consumer protection issues, including the aforementioned high default rates, exist, and whether the newly introduced legislation (CBKB 2021) can properly protect against consumer protection risks. Concerns about consumer protection within the digital credit sector have certainly risen in Kenya (Francis et al., 2017; Mitheu, 2018). Using semi-structured interviews, and KIIs, I focused on consumer protection problems that could harm households using digital credit in the Kenyan digital credit industry, categorising these into three types of consumer protection goals or issues (fair treatment, transparency, effectiveness).

In terms of the issue of whether the borrowers are treated fairly by the lenders, I found that they are struggling with exorbitant interest rates and aggressive business strategies. Furthermore, the borrowers have been suffering from infringement of data privacy, and improper debt collection methods. All of these problems have been triggered by a lack of regulation until recently, with unlicensed lenders freely operating their businesses under a very limited financial regulatory environment. Therefore, CBK recently adopted the CBKB 2021 to better regulate digital credit lenders, which was the first attempt to regulate digital financial service suppliers in Kenya.

However, I found that the newly introduced CBKB 2021 has limitations in solving the problems facing consumers. CBKB 2021 is meaningful as the first attempt to regulate the digital credit industry. However, the bill is not sufficient to reduce the risks that I found from the interviews. First, even if CBKB 2021 attempted to address the dangers which were discussed by the digital credit borrower interviewees, it lacks all the clauses that can resolve those issues. Regarding high interest rates, for instance, there is the clause that regulates extra interest rates following repayment failures, but there is no clause on how to regulate the most crucial contractual interest rate. Second, some clauses might even put both borrowers and lenders at further risk. In particular, the bill's provision stating that borrowers would not be placed on a blacklist if they borrow less than Ksh 1000 might cause both the borrowers and digital credit lenders to be in unsafe positions.

Based on the evidence from my study in chapters 2, 3 and 4, I question the expectation that digital credit is a transformative service that can reach all vulnerable groups, allows people to access affordable credit, and which enables the financially vulnerable to change their economic lives. The findings of the thesis indicate that digital credit has limitations in reaching some vulnerable groups to some extent, and above all, it has various risks when used. However, it is not negligible that digital credit has much higher accessibility than other loan services.

Therefore, it is important to find measures to suppress the risk of digital credit as much as possible and increase its effectiveness.

5.2 Policy recommendations

To reduce or mitigate the risks of digital credit in Kenya, here I suggest recommendations based on the findings from the research. The risks of digital credit cannot be solved only by the efforts of suppliers, although digital credit suppliers themselves do have some critical issues to resolve. The results of this study suggest that, in order to resolve the negative problems of digital credit, all primary actors must be involved. Figure 13 summarises the recommendations of this thesis for each actor.

Figure 13. Recommendations relating to primary actors


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                        ┌─────────────────┐
                        │    Borrowers    │
                        └─────────────────┘
                    • Enhancing consumer
                      awareness and empowering
                      consumers

    ┌─────────────────┐         ┌─────────────────┐
    │    Regulators   │         │     Lenders     │
    └─────────────────┘         └─────────────────┘
• Improving the current regulations   • Improving and redesigning financial
• Monitoring the lenders                services
                                      • Redesigning credit scoring system
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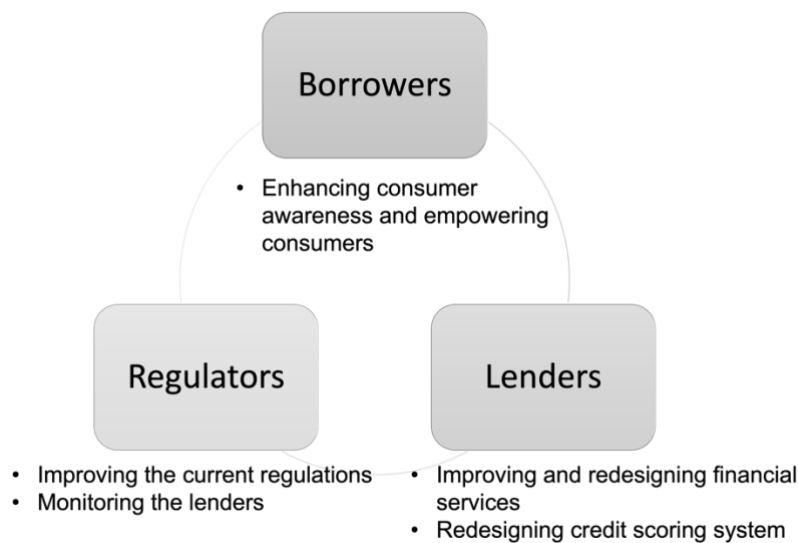
Source: Author's own elaboration

Firstly, in order to minimise the negative effects from the use of digital credit, enhancing consumer awareness and financial and digital knowledge must be achieved. In this thesis, it was confirmed that the use of digital credit is limited according to the level of education of consumers. As shown in chapter 2, it was shown that the elderly and farmers were excluded from using FTLs, since these

customers lacked a certain level of knowledge about or were unfamiliar with digital devices. When the level of consumers' understanding about finance increases through education, the possibility of properly utilising digital credit will increase.

More importantly, however, attention is needed on the fact that consumers with a low understanding of financial matters are more likely to be at risk when using digital credit. In particular, I found in chapter 4 that there were many people who borrowed money without any knowledge about interest rates or what rates they had to pay, and even people who did not know what would happen if they did not pay back the money. In these cases, people are more likely to use digital credit services without due caution, and over-borrow beyond their capacity, which could lead to default and being blacklisted. The absence of financial knowledge could put borrowers at serious risks. Therefore, in order to ultimately achieve consumer protection, financial and digital literacy of borrowers must be improved. CBKB 2021 added a clause that the lenders should educate the borrowers as a recommendation, but this suggestion on education is insufficient to empower the borrowers. Other types of educational policies are required to improve the financial and digital literacy of borrowers, such as a government-provided financial education.

Potential consumers should be aware that there are other loan products available besides digital credit. In Kenya, for example, there are loans designed specifically for the poor, such as those offered by SACCO and Chama. SACCOs are self-help organizations and member-based financial institutions where a group of people deposit their money and lend to one another. They are owned and controlled by their members and aim to promote saving, offer credit at low interest rates, and provide other financial services (Waweru 2011). SACCOs were established to fight poverty by providing underprivileged individuals with the opportunity to finance their future[95].

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[95] https://www.digipay.guru/blog/digital-evolution-of-saccos-after-covid-19/

SACCO nowadays also offer loan services through mobile, similar to digital credit services. However, the amount of money that can be borrowed depends on the amount of money deposited, according to SACCO's policy. The interest rates of SACCOs are typically lower than those of digital credit services; for instance, Thibiti loan charges interest rate of 2.5 percent monthly[96] and Mobi loan charges 5.0 percent[97]. This is significantly less than digital credit. However, most SACCOs require individuals to register at least three months before being eligible for a loan[98], which can be a more inconvenient obstacle compared to digital credit. Nevertheless, this requirement may prevent indiscriminate lending when viewed from a different perspective.

From the perspective of regulators, government agencies, the most important thing that regulators need to do is to improve the regulatory system of the Kenyan digital credit industry, based on the clear evidence on the risks currently experienced by digital credit borrowers. Since the first digital credit service was introduced in Kenya in 2012, the digital credit lenders, until the CBKB 2021, were able to freely carry out their businesses without regulations (Mitheu, 2018; Putman et al., 2021). In order to bring them into the legal realm, regulators introduced CBKB 2021[99]. Yet, this study found that CBKB 2021 has limitations in solving the difficulties currently faced by borrowers, as discussed in Chapter 4. Of course, this bill is meaningful in showing the willingness to regulate and protect customers, but there are currently limits to these measures. Therefore, it is necessary to supplement the regulations based on the evidence from the perspective of consumers as presented in this thesis.

Furthermore, regulators should pay more attention to and monitor FinTech companies that have newly entered the realm of regulatory framework. FinTech

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[96] https://www.maishaborasacco.com/our-products/mobile-loans-products
[97] https://www.mhasibusacco.com/mobi-loan/
[98] According to the website of SACCOs (e.g. Mhasibu, Maisha Bora, Amref), they require that a potential borrower needs to be a Sacco member for at least three to six months.
[99] The press announcement is released by the CBK like below:
https://www.centralbank.go.ke/uploads/press_releases/139697899_Press%20Release%20-%20Enactment%20of%20the%20Law%20to%20Regulate%20Digital%20Lenders.pdf

companies, such as Tala and Branch, are headquartered in the United States (MicroSave Consulting, 2019), and have been free to do business outside the authority of CBK. However, after the Kenyan Parliament passed the CBKB 2021, they finally have become under the regulatory jurisdiction of CBK (Mbaluto and Mutua, 2022; Mulika et, 2022). It is expected to be tough to monitor and supervise these FinTech companies. As mentioned in Chapter 4, they have expressed their opposition to the license system. This is because there are many things in the CBKB 2021 that hinder their existing business strategy. For example, Tala and Branch, in particular, are invested in by companies such as VISA and PayPal, so they must make more than a certain amount of revenue to pay back the capital money. They had no choice but to charge higher interest rates to their borrowers. This problem was also revealed through the KIIs with officials from MBL. However, since the newly introduced CBK limits the additional interest rate to the principal level in case of delinquency, their profits are likely to fall from the current level. Therefore, it is necessary to carefully monitor whether FinTech companies follow regulations properly or use new business strategies digging into the gaps of current regulations.

Lenders must also play an important role to reduce the risks within the digital credit market. Firstly, digital credit lenders need to check and redesign their loan services once again. In chapter 3, I identified that the characteristics of digital credit like high interest rates and short repayment periods have contributed to increasing the default rate of digital credit. Especially, to lower the default rates is a mission that must be resolved not only for consumer protection but also for the lenders. This is because the high default rate is bound to seriously threaten the sustainability of the lenders. Digital credit companies seeking profits would naturally want to maximize their profits by charging consumers the highest possible interest rate. However, household economies in Kenya have worsened since COVID-19, and more than half of borrowers using digital credit have defaulted on loans, which has become a significant crisis for the sustainability of the digital credit industry. Re-evaluating and modifying current loan services is not just an option but a necessity because the current business method can no longer guarantee a sound profit

structure. Therefore, lenders themselves must review their digital credit services and make efforts to lower the default rate to ensure the sustainability of the industry. For example, according to the results from chapters 3 and 4, many borrowers often defaulted due to short repayment periods. To improve this situation, changes are only possible by the choice and decisions of the lenders, not by compulsion with laws. It may infringe too heavily on the discretion of lenders if the regulations restrict the repayment period to a certain period of time. Of course, short repayment periods may reduce the risk to lenders through fast and frequent repayment, like some cases of microfinance (Ravichandran, 2016), but the result of this study shows this is not the case with the digital credit industry. Therefore, future research is required to confirm how long the repayment period should be to lower the default rate and increase the repayment rate in the case of digital credit. The research would contribute to reducing default rates by setting the appropriate repayment periods. This implication is meaningful in that lenders can correct the problematic part of digital credit on their own and improve their business sustainability.

It would also be a good measure if digital credit lenders, especially FTL, overhauled their credit scoring systems. As described in chapter 3, the reason why the use of FTL causes the frequent defaults could be that they do not have proper systems to filter out the borrowers who have already defaulted. Since FinTech companies do not submit to, nor access, the credit information system of CRB, they are unlikely to know information about the full borrowing activities of loan applicants, which increases the risks of defaults (Putman et al., 2021). They evaluate consumers by using their own credit scoring system without relying on the existing credit rating information by CRB (Francis et al., 2017). They usually collect the information from the history records of borrowers' mobile phones such as airtime and text messages, so there is a limit to finding out whether a borrower defaults or not. In this case, some FTL users are more likely to default frequently by repeatedly accessing different FTL platforms without repayment, since FinTech companies do not share the information with each other. Therefore, FTL lenders need to improve their

credit rating system, which is currently suffering from limited information, rather than simply offsetting borrowers' risks by imposing higher interest rates. Not only will it be important to share information with CBR, but it will also be important to subdivide customers and set risks differently to give them interest rates appropriate for their risks based on the proper credit scoring system.

I do not intend to say that digital credit is a bad financial service. Digital credit is clearly a financial service that has the potential to provide opportunities for people who have not been able to use financial services. In particular, it could provide convenience for rural people who had not been able to use financial services; my results have in fact shown increased financial inclusion in rural areas. However, we should not ignore the negative outcomes from the use of digital credit. The findings of this thesis mean we must avoid seeing digital credit as only a solution to financial exclusion in the lending market. Digital credit clearly displayed a number of limitations and risks for vulnerable populations; therefore, digital credit should no longer just grow in a laissez-faire environment. This recommendation is applied not only for Kenya but also to other LMICs whose digital credit sector is growing rapidly like Malawi and Nigeria. The myth of digital credit is no longer tenable. In reality, we should face and solve the problems of digital credit right now[100].

5.3 Limitations

This thesis adds empirical knowledge and understanding to the current academic environment on the digital credit industry in Kenya, but this research has some limitations that should be noted. In terms of the secondary data source, FHS 2019 data dealt with the subject of digital credit as a sub-item rather than a major topic, hence depth of the data was bound to be limited. FHS 2019 asked about the overall financial life and behaviours of the Kenyan population and did not contain in-depth

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[100] https://cepr.org/voxeu/columns/impact-digital-credit-low-income-countries

data on the borrower's use of digital credit exclusively. For example, an analysis of late repayment on digital credit could not be conducted in this study since the survey data did not include data on late repayment, although it could be a leading indicator of the default rate. The study would be richer if details about late repayment on digital credit had been included. Also, the FHS 2019 does not contain panel data, so the impact of digital credit on households over time could not be examined. Of course, the limited content of the data from the FHS 2019 were supplemented to some extent through in-depth interviews with borrowers and lenders, which enabled a more thorough focus on the use of digital credit services. In a future study, it is necessary to use a large-scale quantitative approach by conducting a large-scale survey or surveys exclusively based on the use of digital credit in Kenya.

In addition, there is a limitation with the sample used for the semi-structured interviews. Interviews with consumers were limited to those living in slum areas, and not conducted on a wider range of consumers with different characteristics. This could limit the possibility of deriving inferences or making claims about the typicality of the results, beyond the specific context. Although the study focused more on vulnerable populations, there is a limit to representing the entire context of Kenya's digital credit industry.

And above all, in order to understand the digital credit industry, it was important not only to interview borrowers but also to interview digital credit lenders and regulators. However, in the current digital credit market, many lenders and regulators have become sensitive due to the situation of the newly adopted regulatory framework in Kenya (CBKB 2021) and they were reluctant to participate in the interviews. It was especially not easy to conduct interviews with digital credit lenders because their reputations have fallen drastically because of critical news about them[101]. In particular, the majority of FinTech lenders who supply FTLs did

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[101] There are many news articles about criticising FinTech firms. See the below links for this. https://www.bbc.com/news/world-africa-57985667

not respond to or refused the interview requests because they had been subject to criticism. Thus, this study had no choice but to be satisfied with interviewing only two mobile bank officials, the lenders of MBL. The study also had difficulties with interviewing the regulators from CBK and the Parliament, because the bill was only recently passed, and various opinions were being collected by them. It seems that the regulators were forced to be careful themselves in these sensitive situations. Interviews with the FTL lenders and regulators were therefore replaced with various document analyses and news, but further interviews with them are required in order to better understand the various power dynamics operating in the digital credit environment.

In addition, when applying the recommendations of this study to other countries, it is important to acknowledge and analyse the differences between Kenya and the corresponding countries. These differences can be attributed to unique market structures. For instance, CGAP assumed that Kenya and Tanzania had similarities since they were regarded as one of the fastest countries to introduce and develop digital credit, and were located close to each other in Sub-Saharan Africa (CGAP, 2016). However, when CGAP (2016) conducted a study on the two countries to explore the current impact of digital credit, they found different characteristics contrary to their expectations due to varying structures of the telecommunications and banking industries and the context of local economies.

Kenya has a higher concentration of the digital credit market than Tanzania. Although adoption of digital credit has been rapid in both countries, the market structures differ significantly from each other. Only 34% of digital borrowers in Kenya have used the closest rival, KCB M-Pesa, while 82% have used the top lender, M-Shwari. In contrast, the digital credit market is more evenly distributed in Tanzania, where 48% of digital borrowers used M-Pawa, 39% used Timiza, and 29%

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https://www.theafricareport.com/22692/opera-denies-hindenberg-claims-of-predatory-loans-in-nigeria-kenya/
https://www.bloomberg.com/news/features/2020-02-12/tech-startups-are-flooding-kenya-with-apps-offering-high-interest-loans

used Nivushe (Kaffenberger et al., 2018). This largely different result of the market structures of the two countries can be attributed to Safaricom's dominant position in the telecommunications sector in Kenya, while there is more competition in Tanzania. I have already mentioned that Safaricom has a dominant position like a monopoly enabled by political authority (see page 28), which leads to taking a priority position in the mobile financial industry. Therefore, it is natural that the Kenyan digital credit market is more concentrated on M-Shwari provided by Safaricom.⊤ This result shows that those countries have different structures of digital credit market, which means that the findings of studies focusing on Kenya have limitations when applied to other countries like Tanzania.

Also, the digital credit industries could be different depending on underlying contextual factors. The recommendations of this study conclude that Kenya should devise and introduce an appropriate regulatory system for the digital credit industry. However, there are some cases where setting regulations would not be the answer, for there are some cases where applying regulations could provoke adverse effects. For example, there are arguments against enacting strict regulations, claiming that it will stifle the growth of the digital credit industry (Didenko, 2017). Countries such as Nigeria and India have, for example, also established regulations for managing digital credit lenders. However, in these two countries, where regulations were applied too strongly, the digital credit industry remains sluggish and fails to distribute across the countries (Muli, 2020). In this case, strong regulations went beyond consumer protection, rather they impeded the development of the industry (Didenko, 2017; Greenacre, 2020). Of course, this thesis does not insist that other financial objectives like financial inclusion should be sacrificed for consumer protection (already described in the literature review in chapter 4), but concludes that the introduction of appropriate regulatory policy is required since it is necessary in Kenya's current situation. However, it is necessary to closely grasp how much the digital credit industry has grown and how many consumer protection problems are present in each country, and then consider

various policies, including regulations according to the distinctive situations of countries.

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Annex

Annex I: Description of variables used in the equation models 1 to 4 in multinomial logistic regression analysis

Category	Variable		Details
Dependent variable	p_j	=	Categorial variable; source of credit most obtained from p_0 = the probability of households do not obtain loan, p_1 = the probability of households have used MBL the most, p_2 = the probability of households have used FTL the most, p_3 = the probability of households have used formal loan services the most, p_4 = the probability of households have used informal loan services the most,
Independent variables: Socio-demographic variables	HHS	=	Continuous variable; the number of household members in a household
	SEX	=	Dummy variable; 0 if male, 1 if female
	AGE	=	Categorical variable; $AGE1_i$ = respondents' age from 15 to 24 (youth aged-working group, $AGE2_i$ = respondents' age from 25 to 39 (young-aged working group), $AGE3_i$ = respondents' age from 40 to 54 (middle-aged working group), $AGE4_i$ = respondents' age from 55 to 64 (mature working group), $AGE5_i$ = respondents' age over 64 years (retiree group)
	Education	=	Categorical variable; $EDU1_i$ = non-educated respondents, $EDU2_i$ = Primary level educated respondents, $EDU3_i$ = Secondary level educated respondents, $EDU4_i$ = Tertiary level educated respondents
	Region	=	Dummy variable; 0 if rural, 1 if urban
	Marital status	=	Categorical variable; $MAR1_i$ = not married and single respondents, $MAR2_i$ = Married respondents, $MAR3_i$ = divorced respondents, $MAR4_i$ = Widowed respondents
Independent variables: Socio-economic variables	The amount of monthly income	=	Categorical variable; ICM_AM1_i = respondents who earns less than KSH 2,250 (the group in the bottom of 25%), ICM_AM2_i = respondents who earns between KSH 2251 – KSH 5000 (the group in the bottom of 20-50%), ICM_AM3_i = respondents who earns between KSH 5001- KSH 10,000 (the group in the bottom of 50-75%, ICM_AM4_i = respondents who earns more than KSH 10,000 (the group in the bottom of 75-100%),
	The source of income	=	Categorical variable; ICM_SC1_i = respondents who earns money from farming, ICM_SC2_i = respondents who earns money as employees, ICM_SC3_i = respondents who earns money from casual working, ICM_SC4_i = respondents who earns money from running own business or self-employed, ICM_SC5_i = respondents who gain money supported from

			NGO, government, or acquaintance, ICM_SC6_i = respondents who earns money from renting or pension, ICM_SC7_i = respondents who earns money from other sources.
	House ownership	=	Dummy variable; 0 no, 1 if yes
	Phone Ownership	=	Dummy variable; 0 if no, 1 if yes

Annex II: Description of variables used in OLS linear regression analysis

Category	Variable		Details
Dependent variables	p_j	=	p_1 = the probability of households has defaulted in a year p_2 = the probability that how many household has defaulted in a year
Independent variables: Loan characteristics	The use of MBL	=	Dummy variable; 0 no, 1 if yes
	The use of FTL	=	Dummy variable; 0 no, 1 if yes
	The use of formal loan	=	Dummy variable; 0 no, 1 if yes
	The use of informal loan	=	Dummy variable; 0 no, 1 if yes
Independent variables: Financial behaviors	Amount of loans (amount of money borrowed)	=	Ordinal variable; $AML1_i$ = respondents borrowing money KSH 0-1000, $AML2_i$ = respondents borrowing money KSH 1001-10000, $AML3_i$ = respondents borrowing money KSH 10001-50000, $AML4_i$ = respondents borrowing money KSH 50001
	Frequency of loans	=	Ordinal variable; $FL1_i$ = respondents borrowing loans once in a year, $FL2_i$ = respondents borrowing loans 2-3 times in a year, $FL3_i$ = respondents borrowing loans 4-10 times in a year, $FL4_i$ = respondents borrowing loans more than 10 times
	Loans from multiple lenders	=	Ordinal variable; $ML1_i$ = respondents borrowing from one lender, $ML2_i$ = borrowing from 2 -3 lenders, $ML3_i$ = borrowing from 4-5 lenders, $ML4_i$ = borrowing from more than 5 lenders
Independent variables: Socio-demographic variables	Sex	=	Dummy variable; 0 if male, 1 if female
	Age	=	Ordinal variable; $AGE1_i$ = respondents' age from 15 to 24 (youth aged-working group, $AGE2_i$ = respondents' age from 25 to 39 (young-aged working group), $AGE3_i$ = respondents' age from 40 to 54 (middle-aged working group), $AGE4_i$ = respondents' age from 55 to 64 (mature working group), $AGE5_i$ = respondents' age over 64 years (retiree group)
	Education	=	Ordinal variables; $EDU1_i$ = non-educated respondents, $EDU2_i$ = Primary level educated respondents, $EDU3_i$ = Secondary level educated respondents, $EDU4_i$ = Tertiary level educated respondents
	Residence	=	Dummy variable; 0 if rural, 1 if urban
	Household size	=	Continuous variable; the number of household members in a household
	Number of dependent	=	Continuous variable; the number of dependents in a household
	Monthly income	=	Ordinal variable; ICM_AM1_i = respondents who earns less than KSH 2,250 (the group in the bottom of 25%), ICM_AM2_i = respondents who earns between KSH 2251 –

			KSH 5000 (the group in the bottom of 20-50%), ICM_AM3_i = respondents who earns between KSH 5001- KSH 10,000 (the group in the bottom of 50-75%, ICM_AM4_i = respondents who earns more than KSH 10,000 (the group in the bottom of 75-100%),

Annex III: Multinomial logit regression: determinants of loan obtainment: if MBL category is the reference group

	(0)	(1)	(2)	(3)	(4)
VARIABLES	**MBL**	**FTL**	**formal**	**informal**	**None**
Household size		-0.070	-0.031	0.023	0.056*
		(0.0464)	(0.0392)	(0.0350)	(0.0328)
sex (male)					
sex (female)		0.304*	0.122	0.543***	0.288**
		(0.1757)	(0.1485)	(0.1350)	(0.1247)
age (18-24 years)					
age (25-39 years)		-0.621**	-0.321	-0.137	-0.563***
		(0.2522)	(0.2427)	(0.2081)	(0.1902)
age (40-54 years)		-0.281	0.550*	0.213	-0.126
		(0.3093)	(0.2815)	(0.2499)	(0.2312)
age (55-64 years)		-0.012	0.785**	0.468	0.124
		(0.4311)	(0.3784)	(0.3479)	(0.3286)
age (65 years)		-1.043*	0.586	0.058	0.095
		(0.6078)	(0.4580)	(0.4243)	(0.4025)
education (none)					
education (primary)		-1.062	-0.952	-1.649**	-2.242***
		(0.8093)	(0.7726)	(0.7262)	(0.7203)
education (secondary)		-1.797**	-1.296*	-2.422***	-3.074***

	(0.8117)	(0.7728)	(0.7264)	(0.7195)
education (tertiary)	-1.867**	-0.702	-2.877***	-3.337***
	(0.8274)	(0.7800)	(0.7379)	(0.7269)

Region (rural)				
Region (urban)	-0.171	-0.517***	-0.179	-0.207
	(0.2037)	(0.1738)	(0.1579)	(0.1473)

marital status (single)				
marital status (married)	-0.060	0.224	0.050	-0.077
	(0.2163)	(0.1920)	(0.1697)	(0.1546)
marital status (divorced)	-0.025	0.190	0.166	0.194
	(0.4262)	(0.3880)	(0.3349)	(0.3140)
marital status (widowed)	-0.727	0.343	0.000	-0.054
	(0.5189)	(0.4032)	(0.3701)	(0.3534)

income (KSH 0-2250)				
income (KSH 2251-5000)	-0.529*	0.128	-0.490*	-0.318
	(0.3060)	(0.3109)	(0.2538)	(0.2444)
income (KSH 5001-10000)	-0.427	0.175	-0.525**	-0.517**
	(0.2991)	(0.3040)	(0.2490)	(0.2390)
income (KSH 10001-)	-0.962***	0.445	-1.082***	-1.027***
	(0.3105)	(0.2974)	(0.2502)	(0.2368)

Income source (farming)				

Income source (employed)		1.074***	0.693***	0.297	-0.120
		(0.3423)	(0.2549)	(0.2471)	(0.2276)
Income source (casual worker)		0.918***	-1.042***	0.017	-0.074
		(0.3065)	(0.2763)	(0.2212)	(0.2094)
Income source (own business)		0.439	-0.308	-0.239	-0.588***
		(0.3119)	(0.2354)	(0.2155)	(0.2017)
Income source (supported)		1.152***	-0.121	0.063	0.141
		(0.3559)	(0.3117)	(0.2730)	(0.2594)
Income source (rent/ pension)		0.455	-0.678	-0.284	-0.277
		(0.9210)	(0.6732)	(0.6443)	(0.5697)
Income source (others)		1.000	0.860	0.304	0.691
		(1.0431)	(0.8239)	(0.8169)	(0.7541)
house ownership (No)					
house ownership (Yes)		0.521**	0.359*	0.368**	0.185
		(0.2174)	(0.1879)	(0.1687)	(0.1562)
mobile ownership (No)					
mobile ownership (Yes)		-1.832*	-1.873*	-3.073***	-3.567***
		(1.0522)	(1.0538)	(1.0100)	(1.0067)
Constant		3.409**	3.091**	6.557***	9.554***
		(1.3755)	(1.3402)	(1.2725)	(1.2623)
Observations	8,393	8,393	8,393	8,393	8,393

* "FTL" is the reference category to compare with other loan services.
Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$

Annex IV: Multinomial logit regression: determinants of loan obtainment: if FTL category is the reference group

	(0)	(1)	(2)	(3)	(4)
VARIABLES	**MBL**	**FTL**	**formal loan**	**informal loan**	**None**
Household size		0.070	0.038	0.093**	0.126***
		(0.0464)	(0.0416)	(0.0369)	(0.0348)
sex (male)					
sex (female)		-0.304*	-0.182	0.239*	-0.016
		(0.1757)	(0.1593)	(0.1440)	(0.1338)
age (18-24 years)					
age (25-39 years)		0.621**	0.300	0.484**	0.058
		(0.2522)	(0.2400)	(0.2002)	(0.1815)
age (40-54 years)		0.281	0.831***	0.494**	0.155
		(0.3093)	(0.2793)	(0.2420)	(0.2226)
age (55-64 years)		0.012	0.798**	0.480	0.136
		(0.4311)	(0.3604)	(0.3209)	(0.2995)
age (65 years)		1.043*	1.629***	1.101**	1.138**
		(0.6078)	(0.5250)	(0.4892)	(0.4699)
education (none)					
education (primary)		1.062	0.109	-0.588	-1.180***
		(0.8093)	(0.4688)	(0.3862)	(0.3749)
education (secondary)		1.797**	0.501	-0.625	-1.277***

	(0.8117)	(0.4771)	(0.3960)	(0.3829)
education (tertiary)	1.867**	1.165**	-1.009**	-1.469***
	(0.8274)	(0.4970)	(0.4262)	(0.4067)
Region (rural)				
Region (urban)	0.171	-0.347*	-0.008	-0.037
	(0.2037)	(0.1809)	(0.1622)	(0.1514)
marital status (single)				
marital status (married)	0.060	0.283	0.110	-0.018
	(0.2163)	(0.2053)	(0.1800)	(0.1654)
marital status (divorced)	0.025	0.215	0.191	0.218
	(0.4262)	(0.3904)	(0.3307)	(0.3089)
marital status (widowed)	0.727	1.070**	0.727*	0.672*
	(0.5189)	(0.4465)	(0.4106)	(0.3953)
income (KSH 0-2250)				
income (KSH 2251-5000)	0.529*	0.657**	0.039	0.211
	(0.3060)	(0.2757)	(0.2075)	(0.1954)
income (KSH 5001-10000)	0.427	0.602**	-0.098	-0.091
	(0.2991)	(0.2708)	(0.2055)	(0.1928)
income (KSH 10001-)	0.962***	1.407***	-0.120	-0.065
	(0.3105)	(0.2817)	(0.2304)	(0.2154)
Income source (farming)				

Income source (employed)		-1.074***	-0.381	-0.776***	-1.194***
		(0.3423)	(0.2981)	(0.2884)	(0.2719)
Income source (casual worker)		-0.918***	-1.960***	-0.900***	-0.991***
		(0.3065)	(0.2975)	(0.2442)	(0.2334)
Income source (own business)		-0.439	-0.747***	-0.679***	-1.027***
		(0.3119)	(0.2805)	(0.2610)	(0.2497)
Income source (supported)		-1.152***	-1.273***	-1.089***	-1.011***
		(0.3559)	(0.3117)	(0.2696)	(0.2557)
Income source (rent/ pension)		-0.455	-1.134	-0.739	-0.732
		(0.9210)	(0.8516)	(0.8228)	(0.7663)
Income source (others)		-1.000	-0.140	-0.696	-0.309
		(1.0431)	(0.8360)	(0.8174)	(0.7540)
house ownership (No)					
house ownership (Yes)		-0.521**	-0.162	-0.153	-0.336**
		(0.2174)	(0.1980)	(0.1762)	(0.1636)
mobile ownership (No)					
mobile ownership (Yes)		1.832*	-0.040	-1.241***	-1.734***
		(1.0522)	(0.4415)	(0.3214)	(0.3110)
Constant		-3.409**	-0.319	3.148***	6.145***
		(1.3755)	(0.7254)	(0.5861)	(0.5632)
Observations	8,393	8,393	8,393	8,393	8,393

* "FTL" is the reference category to compare with other loan services.
Standard errors in parentheses
*** p<0.01, ** p<0.05

Annex V: Summary of KII interview

Interview Questions

1. **As a digital lender, what risks does your company incur and what factors contribute to these risks?**

	__Risk__	__Factors Contributing to the Risk__
1	Credit Risk- High Non Performing Loans- NPLs	Digital loans are unsecured/no securities-collaterals like LogBooks, Title Deeds etc. Covid19 accelerated unemployment with many household members losing jobs, bankruptcy of MSMEs in informal sector with many private sector businesses collapsing;
2	Counterparty Risks	Companies acts as anchors for salaried employee borrowers. Many are affected by economic/business boom-burst cycles leading to layoffs, delayed payments; reduced salaries.
3	Fiscal Risks	National and county governments are experiencing reduced fiscal space as national debt rises to the level of high distress- this percolates via delayed salaries of over 3 months for civil servants, pending bills for suppliers to government of many months or years- Civil servants and suppliers ends up defaulting on digital loans
4	Data Protection and Privacy Risks	Kenya The Data Protection Act, 2019 aligns to the EU General Data Protection Regulation (GDPR) – There is risk of digital lenders not complying in acquisition, use or sharing of borrowers data
5	AML / CTF Financial Crimes Risks	Non bank digital lenders are not financed from customer deposits like banks. Any get funds from overseas opaque sources and stand high risk of being Proceeds Of Crime , money laundering and terrorism financing groups
6	AI/ ML Credit Scoring Model Algorithm Risks/ Model Governance Operational Risks	Many big data Fintechs and big techs have been accused of having algorithm that discriminate based on gender, race etc. Unscrupulous staff can also change the ''live''/''production'' model or mess up with parameters leading to erroneous decisions/ loss of money
7	Reputation Risks / Usuriously High Interest Rate Risks	The effective APR- Annual Percentage Rate for digital mobile loans can sometimes be way in excess of 300% versus Central Bank prudentially regulated commercial banks ;lending rates at below 20% - is this morally right? Transformative or extractive? Hard bare knuckle loan recovery tactics for recovery eg threatening robocalls /SMSs to relatives/spouses/friends of defaulter

8	Consumer Protection Risks	Digital lenders have been accused breaking basic Consumer Protections Principles- CPPs eg overidebtedness; data protection and privacy, disclosure of effective interest rate (APRs)
9	Human Capital/ Data Science Analytics Talent Risks	There is a war of talent – seeking the best global talent in data science
10	Cyber Crime Risks	Hacking of algorithms can lead to immense loss
11	Legislative/ Regulatory Risks	Digital lenders are normally in the ''shadow banking'' space that is not regulated by central Banks and many don't have a Self Regulatory Authority- Many parliaments as well as regulators have strong incentives to bring sanity to the ''wild wild west'' that is digital lending more so when millions of citizens are black listed on Credit Reference Bureaus (CRBs)
12	High Unsustainable Cost of Capital/ Business Model Funding Risks	Digital lenders borrow capital from international financial markets with promises of high returns – they therefore have to give loans at higher rates to not only be able to repay high cost capital but also cater for high expected non- performing loans as the portfolios are unsecured and may of the borrowers are sub-prime with low CRB credit scores

2. **At the company level, what measures are in place to abate these risks and to how successful are they?**

	Risk	Mitigations
1	Credit Risk- High Non Performing Loans- NPLs	Raise credit screening standards/ raise average CRB score for applicants / aggressively collect to recover; buy credit risk guarantees; loan restructuring (extend tenors to reduce payable instalments)
2	Counterparty Risks	Raise credit screening standards for counterparties on individual basis or economic sector wise; Ask for credit risk guarantees from counterparties for their employees; Check off system MOUs; loan restructuring (extend tenors to reduce payable instalments)
3	Fiscal Risks	Check off system MOUs; ask governments for credit risk guarantees for civil servants; loan restructuring (extend tenors to reduce payable instalments)
4	Data Protection and Privacy Risks	Implement Data Protection act

5	AML / CTF Financial Crimes Risks	Show transparency of funders (remove the veil)
6	AI/ ML Credit Scoring Model Algorithm Risks/ Model Governance Operational Risks	Embed model governance in decisioning engines and also as a key risk for review by Board committees (Audit)
7	Reputation Risks / Usuriously High Interest Rate Risks	Peg interest rates to below 50% pa and to track commercial bank maximum landing rates by adding sufficient risk premiums
8	Consumer Protection Risks	Develop and implement Consumer Protection Principles Policy
9	Human Capital/ Data Science Analytics Talent Risks	Offer attractive salaries to attract and retain talent
10	Cyber Crime Risks	Buy and implement state of the art cyber risk management systems, global and local centres security operation etc
11	Legislative/ Regulatory Risks	Work with legislators on laws for digital lending; develop self regulation organization- SRO/association
12	High Unsustainable Cost of Capital/ Business Model Funding Risks	Rethink the funding and business models to enhance credit ratings to access lower cost funds. Explore options to mobilize retail customer deposits funds (buy Deposit Taking Micro Finance Bank);

3. **What are the key regulations that protect your company as a digital lender?**

	Key Regulations for Digital Lenders
1	Constitution of Kenya (2010).
2	Data Protection act 2019
3	Credit Reference Bureau – CRB Regulations, 2020.

4	Employment Act 2007- On Third 1/3 Rule - Without prejudice to any right of recovery of any debt due, and notwithstanding the provisions of any other written law, the total amount of all deductions which under the provisions of subsection (1), may be made by an employer from the wages of his employee at any one time shall not exceed two-thirds of such wages or such additional or other amount as may be prescribed by the Minister either generally or in relation to a specified employer or employee or class of employers or employees or any trade or industry.		
5	Kenya Information and Communications (Consumer protection) Regulations, 2010 & Consumer protection Act No 46 of 2012		
6	Competition Act No. 12 of 2010.		
7	Proceeds of Crime and Anti-Money Laundering Act, 2009 (POCAMLA)		

4. How can lenders and borrowers be more protected from risks associated with lending and borrowing?

	Risk	Protecting Lenders	Protecting Borrowers
1	Credit Risk- High Non Performing Loans- NPLs	Prudential Regulation – Minimum capital requirements for Credit Risks; credit Risk Guarantee	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation
2	Counterparty Risks	Prudential Regulation - Require Counterparty Risk Management Policy; credit Risk Guarantee	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation
3	Fiscal Risks	Check off system MOUs with Government ; credit Risk Guarantee	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation
4	Data Protection and Privacy Risks	Adopt Data Protection act	Enforcement of Data Protection act
5	AML / CTF Financial Crimes Risks	Adopt and implement Proceeds of Crime and Anti-Money Laundering Act, 2009 (POCAMLA)	Enforcement of Proceeds of Crime and Anti-Money Laundering Act, 2009 (POCAMLA)
6	AI/ ML Credit Scoring Model Algorithm Risks/	Develop and implement a model governance policy	Enact and enforce an Artificial Intelligence and

	Model Governance Operational Risks		Machine Learning Governance Law
7	Reputation Risks / Usuriously High Interest Rate Risks	Develop and implement a interest rate risk management policy	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation
8	Consumer Protection Risks	Develop and implement Consumer Protection Principles Policy	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation
9	Human Capital/ Data Science Analytics Talent Risks	Develop and implement a date science talent management policy	Enact and enforce an Artificial Intelligence and Machine Learning Governance Law
10	Cyber Crime Risks	Develop and implement a cybercrime risk management policy; Adopt and implement Computer Misuse and Cybercrimes Act, 2018.	Enforce the the Computer Misuse and Cybercrimes Act, 2018.
11	Legislative/ Regulatory Risks	Legal act by Parliament regulating digital lenders	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation
12	High Unsustainable Cost of Capital/ Business Model Funding Risks	Enact Law Allowing Digital Lenders to Take Deposits from the public	Digital Lenders Prudential Regulation, Conduct of Business Regulation and Consumer Protection Regulation

Annex VI: Semi-structured interviews questionnaires

Fin-tech for the Poor?

The impact of digital credit on vulnerable borrowers in Kenya

Pre-interview checks:	*Explain research, check oral consent and ask permission to audio record.*
	Check respondent is a digital borrower

SECTION A: INTERVIEW IDENTIFIERS AND DEMOGRAPHICS

Interview identifiers

A01 Name of Interviewer	**A02 Date of interview**	**A03 Place of the Interview (e.g. Soweto Nairobi, Kenya)** **Duration of interview**
		Please record how long the interview took

Please record any notes arising from preliminary chat or any other information that may not necessarily fit in any of the questions below

Respondent identifiers

A04 Name of the respondent	
A05 Age of the Respondent *a) 18 – 35 (Youth)* *b) 36– 60 (working class)* *c) 60 and above (Retired/elderly)*	**A06 Gender of the Respondent**
Please record exact age if the respondent discloses it, otherwise enter a, b or c	
A07 Where in Nairobi do you live? (Mukuru, Kayole, Mathare, Kibera)	

A08 What is your highest level of education?

1) None
2) Some primary schooling
3) Completed primary schooling
4) Some secondary schooling
5) Completed secondary schooling
6) Some college/vocational training
7) Completed tertiary/ certificate/Diploma
8) University and post-graduate

A09 (a) Do you have a mobile phone? If yes, what type of mobile phone (e.g. ordinary, smart phone) and how many?

A09 (b) If no to A09 (a) above, do you have access to a mobile phone which is not your own? If yes what type of mobile phone and who owns the mobile phone that you have access to?

1) Formal employment 2) Casual/temporary employment   3) Own business/ self-employed   4) Support from spouse/family/friends 5) Remittances /support from NGO/ government   6) investment/rentals   7) pension   8) others   9) don't know/ refused to answer

A10 (b) Please specify what exactly you do. For example, if employed, what do you do, if business, what business do you do (e.g. selling fruit and veges, tailoring)

1) Single/ never married   2) married   3) live together/co-habiting 4) divorced/ separated   5) widowed   6) don't know/ refused to answer

A11 (b) If you have a partner (e.g. married, cohabiting/co-parenting) what do they do for living?

1) Formal employment 2) Casual/temporary employment   3) Own business/ self-employed   4) Support from spouse/family/friends 5) Remittances /support from NGO/ government   6) investment/rentals   7) pension   8) others   9) don't know/ refused to answer

A11 (c) Please specify what exactly they do. For example if employed, what do they do (e.g. IT) if business, what business do you do (e.g. selling fruit and veges, tailoring)

A12 (a) How many children or dependents do you have?

A12 (b) If you have children how old are they?

1) 0-14
2) 15-35
3) 36 and over

A12 (c) If you have dependents (e.g. family, relatives, friends), how many do you support and how old are they?

1) 0-14
2) 15-35
3) 36 -60
4) Over 60

A13 (a) Do you consider yourself to have a disability?   If yes, what kind?

A13 (b) Does anyone in your household have a disability? If yes, what kind?

Section B (1):   BASIC DESCRIPTON OF THE USE OF DIGITAL LOAN

B01 (a) We know that life can be challenging and many people struggle to earn a living and are sometimes forced to borrow money/obtain loans, have you ever been in that situation where you have to borrow money from the bank, SACCO, micro-finance, privately or through the phone etc? [Like now times are hard due to corona virus and most people are struggling] Tell me what was your experience like?

Possible answers to probe
- *Banks*
- *SACCO*
- *Microfinance*
- *Government loan*
- *Employer*
- *Chama (group)*
- *Shopkeeper*
- *Informal money lender (e.g. Shylock)*

B01 (b) When did you start borrowing? Please tell me the process, for example, what exactly did you do from start to the end? How long did it take for the loan to be processed?

B0 1(c) Roughly how many times do you remember borrowing since you started borrowing?

B02 You have said that you ever borrowed from the traditional loan services (e.g. bank, private/informal lender) how is this experience different from digital borrowing, that is getting a loan through the phone?

B03 (a) What digital loan services have you used in the past? What digital loans services are you currently using. Please tell me all the digital applications you have used in the past and which ones you are currently using.	B03 (b) What digital apps have you used most in the past and now and why do you prefer using it/them?	B03 (c) How did you know about the service/platform?
Possible answers to probe M-Mshwari- Fuliza- KCB-Mpesa- Okoa Stima- Eazzy Loan- Kopa Chapaa- Branch - M-pawa Sacco- Tala- Pesa na Pesa- Pesa Pata- Pesa Zetu- Saida- Zidisha - Pezesha- O-Kash (Okoa Cash)- Timiza- O-pesa-		Possible probs 1. I was told about it by a family/friend 2. I saw a message on my phone about it 3. I learned about it through my group/chama 4. Someone was promoting it 5. Others (specify)

HFC Whizz - Cashway- Credit Hela- Zenka-		
Please put a yes against what the respondent said they use above and if there are others not listed, please add to the list and pub yes against it.		
B04 (a) When you started borrowing on a digital platform (e.g. by phone), what was your initial/first limit amount of money to borrow?	**B04 (b) How much money did you borrow from these digital platforms? (respondents to specify how much they borrowed against each app)** **How much money do you currently have on loan?**	**B04 (c) How much money did you pay back as the interest when you borrowed before?** **How much interest are you paying on your current loan?**

B05(a)   What was the original purpose of borrowing on a digital platform (e.g. by use of mobile)?

Possible answers to probe
To meet day-to-day household needs
For social expenditure (e.g. burial, wedding, birthdays)
For medical treatment
For education for myself or others
For business/investment
For personal use (e.g. new clothes, shoes
Borrowed on behalf of someone else (e.g. family, friends, colleagues)
For betting /gambling
Other (SPECIFY)

B05 (b) After getting the digital loan, was the money used for its intended purpose?

B05 (c) If not, what was the money actually used for?

B06 With the money you borrowed, did you use part of it for betting or for entering a competition for winning money or prize? Or did someone else like a family member use the money for betting/entering a competition

B07 Have you ever borrowed digitally on behalf of someone else (e.g. family, friends, colleagues) and if yes, what was the experience like?

B08 Has someone else (e.g. family, friends, colleagues) ever borrowed money on your behalf with your knowledge/ approval?

B0 9 Has someone else (e.g. family, friends, colleagues) ever borrowed money on your behalf without your knowledge/ approval and you discovered later? What you do?

B010 Has someone else you don't know ever borrowed money with our phone without your knowledge/approval and you discovered later? What did you do?

Section B(2): OVER/MULTIPLE BORROWING /HIGH FEES

B08 (a) How many times have you borrowed on a digital platform   e.g. using your mobile phone?
 	
   1-   Only once with xxx
   2-   Two times with xxx and xxx or same

3- 3- times with xxxx
4- *More than 4 times*

B08 (b) **If you borrowed more than two times** why did you borrow multiple times?
Possible answers to probe

1. *I needed more money- Yes*
2. *I needed to pay back another loan - Yes*
3. *It was easy to access the loan*
4. *It was easy to use the app*
5. *The advertisement attracted me*
6. The *repayments were low*
7. The payback period was short
8. *It suited to my needs*
9. The app is *trustful to use*
10. I just wanted to give it a try
11. Other (Please specify)

B08 (c) **If you borrowed more than two times** did you really need the money? Do you think that you borrowed beyond your means/what you could afford?

B9 If you have borrowed less than twice or used less than 2 apps/products, why?

Possible answers to probe
1. *The money to pay back is a lot for me*
2. *The application is difficult to use*
3. *I find it difficult to understand the terms and conditions*
4. *I am not familiar with using digital devices*
5. *I am afraid of borrowing because I may default*
6. *That is what I can afford*
7. *The service is unreliable*
8. *Others*

B10 Did you pay back all the money borrowed on the digital platform?.	B11 (a) What do you think of the fee that you are currently paying as the interest/fee? you think what you are currently paying back was less or more?
	Possible answers to probe 1. I think I am paying less interest/fee 2. I think the fee is ok/moderate 3. *I think the fee is high* 4. *I think the fee is too high* 5. *I don't know if the fee is low or high* 6. *I am not sure* **If not sure, please explain**

B11 (b) What do you think of the fee that you had to pay on top? you think what you paid back was less or more?

Possible answers to probe
- I think I paid less fee
- I think the fee was ok/ moderate
- *I think the fee was high*
- *I think the fee was too high*
- *I don't know if it was low or high*
- *I am not sure*

B12 If you think using digital loan is expensive/challenging, could you let me know why you have been still using the service?

SECTION C: POSITIVE AND NEGATIVE IMPACTS OF DIGITAL BORROWING

We are very interested to understand digital money borrowers' experiences, both positive and negative including securing money for basic needs, emergencies, businesses, defaulting and potentially being blacklisted etc.

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C01(a) Please tell me some good things about your experiences of borrowing digitally… For example, what exactly did you use the money for and how did it help you?

Fast,
Efficient
Easy to use

C01 (b) Do you prefer to borrow digitally on your phone compared to borrowing from traditional banks, if so why?

E.g. Ease of getting loans, fewer identity/credit checks and so on.

C01(c) Please tell me some not so good things about your experiences of borrowing digitally… For example, have you got into trouble borrowing?

Potential probs

1. *I did not know what I was getting into*
2. *I had to borrow to pay back another loan*
3. *I paid a high fee*
4. *I had to throw away my sim card to avoid being prosecuted*
5. *I defaulted*
6. *I was harassed by the lender*
7. *The lender phoned my family and friends*
8. *I was given warning by the lender*
9. *I was embarrassed*
10. *I became depressed and developed an illness*
11. *Someone else used my phone to borrow without my knowledge*

C02 Have you ever done late repayment on your digital loan services?	**C03 If yes could you please tell me on which of the services/platforms you did late repayment? What did you do?** **e.g. I** had to borrow to pay it back

C03 What was the main reason that you did late repayment?

Possible answers to probe:
1. *High interest rate*
2. *Borrowed too much originally*
3. *Forgot to re-pay on time*
4. *Did not understand the terms*
5. *Had to pay off other loans first*
6. *Lost the source of income*
7. *Unexpected emergency expenditure*
8. *Short-term period of repayment*

C04 (a) Have you ever defaulted when you borrowed digitally? **Yes/No**	**04 (b) If you have defaulted, please tell me on which digital platform you defaulted? What did they do? For example, did they contact you and how many times?**

C04 (c) What was the main reason why you defaulted?

Possible answers to probe:
1. *I did not have money to pay back on time*
2. *The fee was too high for me*
3. *I borrowed too much originally*
4. *I forgot to re-pay on time*
5. *I did not understand the terms*
6. *I had to pay off other loans first*
7. *I lost the source of income*
8. *Unexpected emergency expenditure occurred*
9. *The repayment period was too short*

C05 (a) Please tell me what you did when you defaulted.
Possible answers

1. I stopped using the service completely and never paid back
2. I switched and started using another service
3. I threw away my sim card
4. I looked for the money and paid back
5. Someone else paid on my behalf

C05 (b) What challenges did you experience because of defaulting?
Possible answers to probe:

1. I was blacklisted at Credit Reference Bureau (CRB)
2. I paid an extra or rollover fee
3. They reduced my loan limit
4. I could not access the loan anymore
5. I was prosecuted
6. They confiscated my property,
7. I was fined and paid penalties
8. People knew about it and I lost my networks/ friendship due to bad reputation
9. I became depressed and worried
10. I did not experience any negative consequences
11. I am not sure

C06 (a) Have you ever experienced any technical problems or challenges with digital borrowing services, for example how to operate the digital platform? If yes, what were they?

Possible answers to probe:

1. Poor network services (suddenly networks down)
2. Poor interfaces to use (I don't understand the platform)
3. I don't know how to use the platform/service very well
4. Lost money due to inexperienced agents
5. Lost money due to rogue lenders
6. My phone is not very good, it keeps switching off
7. Others

C06 (b) If yes to Q C06 (a), what did you do to solve the problem?

1. *I asked someone else who helped me*
2. I *contacted service providers directly*
3. I *contacted service providers through service agencies*
4. I found another way
5. I did nothing

C07 (a) If you contacted the service provider, what was your experience?

Possible answers to probe:

1. *An acquaintance helped me solve the problem, so I didn't need to contact service providers*
2. *Received problem-solving consulting from service providers*
3. *Compensation from service providers (money)*
4. *Received compensation from service providers (reward other than money)*
5. *Complained to the service providers, but there was no response.*
6. *Complained to the service providers, but the compensation was denied.*

Others

C07 (b) Was the problem solved, did you feel well supported or not supported?

C08 Of all the digital applications (services) you use or have used, which ones are the MOST challenging (e.g. technically) to use? Which ones are the EASIEST (less challenging) to use?

C09 Have you ever been 'conned' by a rogue/fake lender, for example someone fooled you and took your money? Please tell me your experience with a rogue/fake lender, e.g. how do they operate?

C10 If you have been 'conned' Please tell me your experience with a rogue/fake lender, e.g. how do they operate?

SECTION D: REGULATIONS AND DATA PROTECTION

D01 (a) Are you aware of any policies or regulations which control digital loan lenders like Safaricom, Tala, Branch, how did you become aware of them?   1. *Yes I am aware*   2. *No I am not aware*
D01 (b). If yes, which ones are you aware of and do you know their functions?
D02 (a) Are you aware that there are any policies or regulations which protect digital borrowers like you from the challenges or problems you face?
D02 (b) If yes, which ones and what are their functions?
D03 When you did registration at first, did you do it yourself or did someone help you?

D04 When you did registration, did the lender/service provider ask you to give a permission to access your personal data.
D0 5 When you did registration, did you review your personal information before submitting? Did you understand why they took your personal information and how it would be used
D06 When you did registration, did you do it in your name or used a family members name? Did you give a guarantor's/referee's name like your spouse, sibling etc? **They needed one who is connec**
D07 did you understand the terms and conditions of the digital lender? If yes, what did you understand? e.g. Fee to be paid, penalties for late payment/default, etc
D08 If you did not understand the terms and conditions what did you do? **Probe e.g. I asked someone to explain to me**

I just accepted

SECTION E: DECEPTIVE ADVERTISING AND FAKE LENDERS

E01 (a) Have you ever got advertisements or text messages that promote digital borrowing services?
E01 (b) If yes, what products were being promoted and by whom? *e.g. Safaricom was promoting loan for….*
E01 (c) Did you use the product/service as a result of the advertisement?
E01 (d) Did you trust the advertisement, the service provider. the product? If so, why?
E02 Most digital lenders claim that they offer loans with low fees, have flexible repayment plan as well as being more accessible. What do you think about this? Do you believe this?

E03 Most digital lenders claim that they lift poor people out of poverty and also empower women. What do you think about this? Probe: Do you believe this?

SECTION F: POLICY NEEDS

F01: Considering all the challenges and problems that you have experienced as a digital borrower, (e.g., excessive charges, fake lenders, harassment etc), in what ways do you think you can be better protected from these?

F02: Who do you think is responsible for protecting digital borrowers from these challenges/problems?

e.g. the lenders, the government, etc?

F03. Do you have any questions? Is there anything else you would like to tell me regarding digital borrowing?

Annex VII: Demographic descriptions of in-depth semi-structured interviews with digital credit borrowers.

	%	Frequency		%	Frequency
Sex			Income Sources		
Male	12		Formal employment		1
Female	18		Casual/ temporary employment		7
Total	30		Own business/ self-employed		22
Age			Total		30
18-35 years	12		Phone		
36-60 years	17		Smartphone	17	17
60 and above years	1		Feature phone	2	2
Total	30		Both	10	10
Education			N/A	1	1
Some primary	1			100.0	30
Completed primary	7		Marital status		
Some secondary	3		Single		9
Completed secondary	9		Married		16
Some college/ vocational training	3		Live together/Co-habiting		3
Completed tertiary/ certificate/Diploma	5		Divorced/separated		1
University and post-graduate	1		Widowed		1
N/A	1		Total	100.0	30
Total	30			100.0	347
Region					
Soweto	9				
Kibera	8				
Mukuru	6				
Mathare	7				
Total	30				