

Effect of Digital Credit on the Financial Health of Youth Borrowers in Kibera, Nairobi County

Mercy Wambui Wachira, Allan Kihara, Timothy Okech

Chandaria School of Business, United States International University Africa, Nairobi, Kenya

Email address:

mwwachira4@gmail.com (Mercy Wambui Wachira), njoguak@gmail.com (Allan Kihara)

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Abstract: The increased advancements in technological integration within the financial sector has led to development of new credit platforms which improve access to borrowing among the youth. Further, with proliferation of digital lending platforms which provide unsecured loans has led to a debt chokehold among the youth. This has resulted in poor financial health among the youth. Hence it's vital to understand how various digital credit platforms have contributed to financial health of borrowers and help in advancing policy and practical solutions. The general objective of the study was to analyze the effect of digital credit on the financial health of youth borrowers in Kibera, Nairobi County. The study specifically analysed the effects of mobile network operator facilitated digital credit, commercial bank-based digital credit and fintech based digital credit on the financial health of youth borrowers in Kibera, Nairobi County. The study employed a correlational research design. The population of interest was youth borrowers who live and work in Kibera, Nairobi County. The sampling frame was active users of digital credit who are between 18 and 35 years, residing in Kibera. The list was obtained from the Independent Electoral and Boundaries Commission's voter register for Kibera Ward. A stratified sampling technique was used to select the respondents. The sample size was 399 respondents. Data was collected using structured questionnaires. SPSS was used to aid in the data analysis. A descriptive statistical technique of analysis was used and entailed the determination of the mean and frequency distribution of the datasets. Further inferential analysis was conducted using both correlation and regression analysis. The data was presented in tables and figures. The study results shows that mobile network operator facilitated digital credit, Bank-facilitated digital credit and fintech facilitated digital credit has a positive and significant effect on youth's financial health in Kibera Ward. The study recommends that mobile money operators that provide digital loans reduce their operation rates considering they have high interest rates for the small loans they offer. The study also calls for the development of progressive peer to peer regulations that would improve the penetration of these loan devices. The study recommends improved client assessment to increase borrower's ability to access funds without long-term history. The study recommends that the firms make attempts to guarantee interoperability between devices as this would significantly improve access for borrowers with older phones.

Keywords: Mobile Network Operator Credit, Commercial Bank-Based Credit, Fintech Based Credit, Financial Health

1. Introduction

1.1. Background of the Study

Access to financial services is essential to ensuring the youth develop into productive members of the society, enabling them to meet personal and family needs [31]. However, Jamie, Hopkins and Myra [24] are assertive that many young people often enter adulthood without access to financial services, leaving them unable to contribute to

economic and social development. Healthy, productive youth need a reliable and supportive enabling environment with access to a range of financial and nonfinancial services and assets, and digital tools have emerged as new ways for financial institutions to facilitate access to financial services within various population segments such as women and the youth [26]. However, World Bank [51] reports that despite significant progress in the development of financial resources devoted to financial inclusion, more than two billion people lack access to financial services worldwide; and that the youth

are the most disparaged. Digital finances such as mobile money and crowd funding have emerged as important financial innovation tools that have been deployed to facilitate financial access in developing economies [21]. Tay, Tai and Tan [48] avert that digital financial services have been effective in enabling marginalized people to partake in the formal financial process. Their advent has been facilitated by supportive policies, increased ownership of mobile phones, and internet connectivity [15]. Digital platforms have been used to educate the public on available financial products and facilitate access to these products at improved convenience and at lower costs [53]. Currently, financial institutions are leveraging technology to facilitate youth's access to financial products such as digital loans, savings, and transfer with the aim to stimulate youth entrepreneurship [18].

In the past, bank loans were characterized by stringent conditions which saw only 8 and 7 percent of youth in low- and middle-income countries borrowing from formal financial institutions [1]. Digital channels provide financial institutions the capability of providing remote banking products [34]. Digital credit has evolved to address the needs of unbanked individuals [2]. They guarantee small loans to low-income earners and startups without asking for collateral [4]. In 2018, the value of the digital credit market in the world was estimated to be USD 3.5 billion, rising to USD 10.7 billion in 2021 and is anticipated to grow to USD 20.5 billion by 2026 [33]. This growth has been stimulated by the proliferation of smartphones, the need for better customer experience, supportive government interventions to safeguard digital lending, increased market information, increased demand for digital credit among SMEs, and an increase in digitization during the pandemic [49]. Digitalization enables automation which increases the convenience and ease of access to loans by customers but according to Normawati, R. A., Rahayu, S. M., & Worokinasih, S. [40] digital loans taken for consumptive needs can negatively affect a borrower's financial well-being and contribute to over indebtedness.

The growth witnessed in Kenya's digital landscape is reflective of her payment landscape, with a shift in consumer behavior seeing increased demand and supply of mobile financial solutions [36]. Most Kenyans own mobile phones, making access to digital loans easy and since the first digital loan issued in November 2012 more than 26.3 million people and 500,000 businesses and corporate subscriptions have been made on Kenyan platforms [5]. The number of digital loan products in the country has expanded to include products such as KCB Mobi services that enable customers to borrow loans, get salary advances, and Kopa bills, whereby customers access short-term loans to pay off their bills. Babu [4] shows increased adoption of digital services in other banks such as Commercial Bank of Africa (CBA loop), Barclays Bank of Kenya (Timiza), telecommunications' firms such as Safaricom (M-shwari) and Airtel (Kopa Chapaa), as well as Fintechs such as Branch, Tala, Saida, Zidisha, Kiva, Pesa na Pesa, Pesa Pata, Okash, M-Kopa, and Haraka have also perforated the lucrative industry. As such, many low-income borrowers have developed a dependence on these

loans to meet their livelihood, necessities, education needs, emergencies, and to meet other financial responsibilities [39]. In 2021, for instance, 8.5 million Kenyans made more than 2 trillion mobile money transactions worth more than US\$61 billion. Access to finances has been associated with increased financial well-being for businesses and individuals [3].

1.2. Statement of the Problem

Ahmad, Green and Jiang [1] avers that access to financial services is key to sustainable economic performance within an economy. Towards this end, digital technologies serve as key tools for facilitating financial inclusion and negating the harmful effects of poverty [3]. Digital technologies are changing how borrowers interact with financial institutions, and how lenders target possible customers, especially the youth who are key to economic development [20]. Digital tools have enabled lenders and borrowers to disburse and repay loans electronically, making the loan system "instant, automated, and remote", facilitating financial inclusion [42]. In sub-Saharan Africa, digital credit is mainly offered through loans disbursed via mobile money platforms [50]. Robinson, Park and Blumenstock [43] acknowledge that there exists robust demand for digital loans, and millions of people have taken out these loans, despite significant questions being raised regarding the effectiveness of these loans to the users and the transparency of lenders to their consumers. Accordingly, Bjorkegren, Joshua, Omowunmi, Jacqueline, and Suraj [9] assert that easy access to high-interest loans does not necessarily benefit consumers. Digital loans are mostly automated, have flexible payment and lending terms, rarely require collateral and short repayment periods, while digital borrowers are mostly ill-informed about loan terms [22]. In Malawi, for instance, Brailovskaya, Dupas and Robinson [11] report that only a third of potential borrowers are aware about interest rates, the due date, or the consequences upon late fee payment. Brailovskaya, Dupas and Robinson [11] additionally reports lack of clear information sharing between lenders and borrowers, with lenders intentionally misrepresenting lending terms and leaving them opaque. The opaqueness of digital loans has left borrowers incurring significant fines, with most being unable to afford high interest rates [38].

Studies on the relationship between digital credit and borrower well-being report contrasting findings. In China, peer to peer lending has been associated with increased economic activity and startup success [25]. Jiang, Wang, Ren and Xie [25] researched on the Portuguese FinTech space and determined that after SMEs access FinTech loans, they increase asset investment, employment, and sales, and can diversify from a wide pool of lenders. Robinson, Park, and Blumenstock [43] reviewed literature on the impact of digital credit on developing economies and found evidence that digital loans have positive impacts on borrower welfare, resilience, and subjective well-being. In Nigeria, Bjorkegren, Joshua, Omowunmi, Jacqueline, and Suraj [9] investigated the effect of instant loans on well-being and reported that although mobile application loans have positive effects on subjective

well-being, they have insignificant effects on expenditure, resilience and economic empowerment. Stiglitz, Akerlof and Spence [46] investigated the effect of fintech loans on household resilience in Kenya by focusing on the M-Shwari loans and reported improved capacity for households to cope with income shocks. No negative outcomes were associated with the use of M-Shwari digital loans. According to Ozili [42], digital credit increases access to finances among poor individuals, smoothens household risks during economic shocks, reduce the cost of financial intermediation for banks and Fintech providers, and increases aggregate government expenditure. None of these studies address how these types of credit affect youth borrowers [13].

Theoretically, improving financial access has been associated with improved economic and personal well-being, with finances ensuring people can meet their immediate expense needs, emergency needs and investment goals. However, according to Bećirović, Plojović and Ujkanović [7], access to finances does not translate to effective utilization of said funds. Instead, credit effectiveness is dependent on the borrower's financial literacy [3]. According to the Global Findex studies by the World Bank, between 2014 and 2017, although financial inclusion (account ownership) rose across the world, financial resilience decreased in all regions, excluding high-income countries. In Kenya FinAccess surveys by FSD-K showed that the number of financially healthy adults dropped between 2016 and 2019, even as access and usage of financial services increased. The emergence of digital credit may facilitate financial inclusion but also carries with it the risks associated with late payment, financial mismanagement and high default rates, which may contribute to stress among borrowers [35]. This study sought to assess the effect of three categories of digital credit on the youth's financial health and well-being, considering this age group lacks stable sources of income, financial knowledge and high affinity for digital services and products [45].

1.3. Objective of the Study

The main objective of the study is to establish the effect of digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya.

1.4. Specific Objectives

- i. To analyze the effect of mobile network operator facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya.
- ii. To establish the effect of bank facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya.
- iii. To determine the effect of fintech facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya.

1.5. Research Questions

- i. To what extent does mobile network operator facilitated digital credit affect the financial health of

youth borrowers in Kibera, Nairobi County, Kenya?

- ii. What is the effect of bank facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya?
- iii. What is the effect of fintech facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya?

2. Literature Review

2.1. Asymmetrical Information Theory

The theory was established in the 1970s by George Akerlof, Michael Spence and Joseph Stiglitz but was formalized in 2001 [47]. The theory affirms that information asymmetry is the most fundamental challenge for financial transactions and associates the problem with ex-ante adverse selection and ex-post moral hazard problems [44]. In perfect market settings, all transacting parties have costless access to all details pertaining to the transaction, present and future trading conditions and do not suffer from market failure of information. However, in the real world, the operating environment is associated with high uncertainty risks, and market information is neither perfect nor costless. This theory posits that in any transaction, lenders may allocate finances to risky projects that may not produce positive outcomes; and creditors will offer their services at costs that equal the opportunity cost of funds. Information is, thus, distributed asymmetrically between the lender and borrower [14]. Lenders usually use financial history, collateral assets, and soft information to analyze and mitigate credit risk. Financial history analyses borrowers' financial data to predict borrowers' probability of loan default [8]. Collateral refers to the quality and valuation of assets or guarantees that are used as securities, while soft information refers to small purchases and repayment data that show borrower's immediate financial history [8]. These three strategies help bridge the information asymmetry between lender and borrower, and several studies show how lenders can leverage on these three to help minimize two main information asymmetry problems; adverse selection and moral hazard [6].

From the lender's point of view, adverse selection is a result of lacking adequate information on the credit worthiness of the borrower and the value of the various projects being financed. On the other hand, borrowers may fail to fulfil their loan obligations, giving rise to the problem of moral hazard which is a result of the lender's inability to effectively monitor all loan project progress [32]. From the borrower's perspective, adverse selection results from the lender's inability to provide all details regarding loan terms such as interest rates and loan repayment period. This can contribute to selection of bad loan terms, resulting in a moral hazard whereby they fail to meet their loan obligations. The lender may also exacerbate the moral hazard problem by preferring to keep some information regarding lending terms secretive to attract unsuspecting borrowers and make higher profits [41]. The information asymmetry theory shows that

both lenders and borrowers stand to benefit from asymmetric information problems. The theory asserts that the cost of bad loans, befall both parties, since lenders will make bad investments while borrowers will take high interest, low-value loans. This theory has been useful before in explaining non-performing bank loans according to Kingu, Macha and Gwahula [28], and has since been employed in assessing the effects of Fintech credit risk on SME performance in China [23]. Lu, Wu and Ye [32] used the theory in explaining the relationship between digital footprints of customers and how firms use them to predict customer default rates. This study sought to use the relationship to explain the effects of digital credit factors such as lending terms, finance usage and interoperability on the financial health of youth digital credit applicants, who, in many ways behave like businesses when seeking the best loan terms.

2.2. Empirical Literature Review and Research Gaps

2.2.1. Effect of Mobile Network Operator Facilitated Digital Credit on Financial Health

Li, Wu and Xiao [30] used unbalanced panel data reported by the China Household Finance Survey in 2013, 2015 and 2017, and the digital inclusive finance index developed by Peking University in examining the impact of digital finance on household consumption. The study used regression analyses which revealed that digital finance is a significant determinant of household's consumption patterns, especially low-income citizens with fewer assets. Digital loans and payment systems were identified as the key sources and methods of payment, encouraging loan access and expenditure. Digital loans relieved households' liquidity constraints, expanded investment channels and increased income, thus enhancing security. This study did not specify digital loans but focused on all digital financial services including payment, saving and obtaining credit.

Kouame and Kedir [29] reported a proliferation of disruptive technology in finance and investigated the effect of mobile money transactions and use of this ICT-enabled payment, deposit and credit on financial inclusion in Burkina Faso [27]. The study carried out a review of available literature and defined financial inclusion as the ability to make investment in business, education and health. The analysis revealed that most mobile money transactions were for payment and self-investment. The analysis revealed that the small mobile loans were key to ensuring students met their education goals such as fee payment, class attendance and purchase of essential educational materials which are relatively cheap. The study recommended development of student-specific digital credit to facilitate relationships with financial institutions.

2.2.2. Effect of Bank Facilitated Digital Credit on Financial Health

Chen, Friedline and Lemieux [12] used propensity score matching in analyzing the effect of payday loan use (PLU) and financial well-being of households. The analysis revealed mixed effects on the relationship between the study variables. On one

side, the usage of pay day loans has been associated with harmful effects when not well managed, potentially impacting families' ability to pay bills and make ends meet. However, the study also reported improved coping with emergencies since the payday loans complemented household flow. The study concluded that the relationship is complicated and that the users' financial literacy is a significant determinant of family well-being after approval of payday loans.

Fang, Kwon and Park [16] carried out an examination into the impact of digital bank adoption on transaction behavior and competition between digital and traditional banks. The study based its findings on two digital banks in South Korea, KAKAO Bank and K Bank and leveraged on consumers' transactions with multiple banks and retailers. The study relied on a difference-in-differences model. The analysis revealed a positive relationship between digital bank adoption and transaction frequency and amount, with digital banks competing successfully with conventional banks for offline consumption. The analysis showed a more significant effect of digital bank adoption on offline consumption than online consumption, showing positive outcomes on the well-being of borrowers. The study investigated digital bank products usage, while this study specifies digital bank loans on borrowers.

2.2.3. Effect of Fintech Facilitated Digital Credit on Financial Health

Nathan, Setiawan and Quynh [37] carried out an in-depth descriptive analysis of the effect of Fintech on Vietnamese population's financial health during the COVID-19 pandemic. The study carried out interviews and collected primary data, applying thematic, descriptive and correlational analyses. The study findings showed that fintech platform' perceived ease of use, usefulness, trust, brand image, government support, user innovativeness, and attitude improve fintech usage, while financial literacy was determined to have an insignificant effect on fintech adoption. Multiple linear regression analyses ascertained that fintech plays a key role as an intermediary that can facilitate financial inclusion among individuals with low financial literacy and improve access to finances for personal and investment needs. However, no significant negative effect was established on the borrowers, with borrowers being encouraged to use the services to finance their start-ups.

Gubbins and Edoardo [20] carried out an investigation into the effect of fintech on occupational choices of women in sub-Saharan Africa by focusing on Burkina Faso and Cameroon. The study specified whether the use of digital credit improves self-employment and improves livelihoods of marginalised social groups. The data analysis was based on FinScope Consumer surveys and the data was collected off face-to-face interviews. The collected data was analyzed using a probit regression model. The analysis revealed that mobile money has a significant positive association with both men and women self-employment and entrepreneurship, ascertaining that economy-wide adoption of fintech products can transform livelihoods and create jobs.

2.3. Conceptual Framework

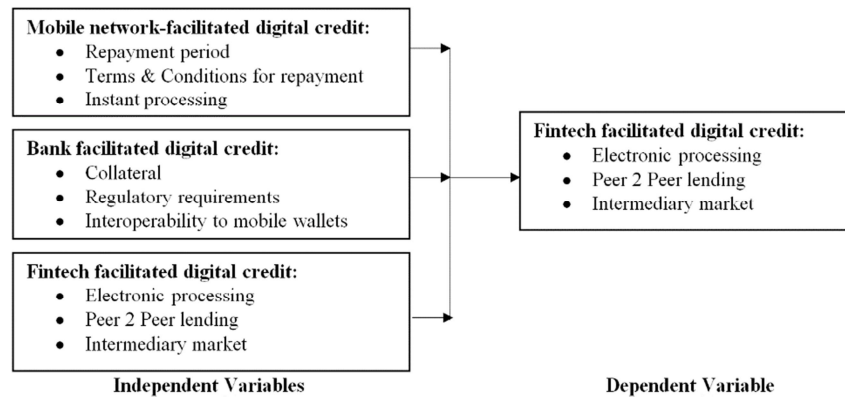


Figure 1. Conceptual Framework.

3. Research Methodology

3.1. Research Design

The study employed a correlational research design which is a type of non-experimental study in which relationships are assessed without manipulating independent variables or randomly assigning participants to different conditions.

3.2. Target Population and Sample Size

The target population comprised of 118,276 youth mobile loan borrowers residing in Kibera. The sampling frame for this study was active users of digital credit who are above 18 years, residing in Kibera. Stratified random sampling technique was used. Stratified sampling allowed for inclusion of categories of respondents in proportion to their existence in the large population to ensure that all population groups are represented in the sample. The stratification of the participants was based on their age; if they fit within the description of youth members of the population between 18-35 years. Further, the study only considered participants who have applied and utilized a digital credit provider in the past and excluded any respondent who has not used any of the services. A sample size of 399 mobile loan borrowers was selected from the large population of borrowers of digital credit. Representatives was calculated using Yamane's formula with 95% confidence level and $P=0.05$ yielding a sample size of respondents [52]. The sample size was derived from the below formula:

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where: n = sample size required

N = size of the population = 118,276

e = margin of error = 0.05

$$n = \frac{118276}{1 + 118276(0.05)^2} \quad (2)$$

$$n = 398.65 \approx 399$$

3.3. Data Collection Methods

Data collection was done in the month of September 2022 via Google forms among 399 youth members drawn from Kibera using a stratified random sampling technique. For this study, primary research methods was utilized. Primary research methods involve collecting first hand data from the selected sample; primary data denotes information collected for a distinctive purpose pertaining to the research at hand [19]. The primary research method was the use of questionnaires that contain questions relevant to the research questions. Questionnaires was appropriate for this study because they saves on time and ensure anonymity of the respondents. The questionnaires have been structured according to the research objectives of the study. The respondents, who are not fluent in English, was guided by the researcher to ensure comprehension of the questions.

3.4. Data Analysis Methods

According to Blumberg, Cooper and Schindler [10], data analysis is a research technique for the objective, systematic and qualitative description of the manifest content of a communication. Data analysis gives a diagnostic tool that is used to assess the adequacy of the model and to check assumptions [17]. The results from the questionnaires were coded and entered into the Statistical Package for Social Sciences (SPSS) for further quantitative analysis. Descriptive analytical approach was used in this study and this involves a process of transforming a mass of raw data into tables, charts, with frequency distribution, percentages, means and standard deviation, which are a vital part of making sense of the data. Further the research conducted inferential analysis involving both correlation and linear regression analyses to determine the relation between the variables and the strength of the relationship respectively. The data was then be organized into tables, graphs and charts so as to ease data interpretation. The study employed the below multiple regression for the main objective and this was further condensed in conducting simple linear regression for each individual independent variable;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (3)$$

Where;

Y = Dependent variable (financial health)

α = the model intercept

B1-3 = Coefficient of independent variables

X1 – Mobile network operator-facilitated digital credit

X2 – Bank facilitated digital credit

X3 – Fintech facilitated digital credit

ε = Error Term

4. Research Results

4.1. Financial Health Among Youth in Kibera

The dependent variable for the study reviewed the financial health of the respondents through analysing mental health, financial resilience and the standard of living. The study adopted descriptive measures such as frequencies, means and standard deviation.

Table 1. Financial Health among the Youth.

	N	Mean	Std. Deviation
I'm able to meet my regular financial obligations	351	3.2821	.93668
I have the capacity to meet all my consumption needs	351	3.1709	.92542
I have the ability to withstand changes with the economy and sustain my needs	351	2.0142	1.02390
I'm able to meet my regular expenses without any problems	351	1.9544	1.04918
I have been able to meet my short and long-term financial goals	351	3.4348	1.06693
I'm able to sustain my well-being and improve on the standard of living with ease	351	3.9088	.99295
I have made adequate plans to ensure my financial resilience in the long-run.	351	4.1538	1.09765

The respondents agreed they have made adequate plans to ensure their financial resilience in the long-run (Mean = 4.154, Dev = 1.098). The youth moderately agreed they are able to meet their short and long-term financial goals (Mean = 3.435, Dev = 1.067). The analysis showed disagreement among respondents (Mean = 2.014) they have the ability to withstand changes with the economy and sustain their needs. The study also noted disagreement among respondents (Mean = 1.954) they are able to meet their regular expenses without any problems.

4.2. Effect of Mobile Network Operator Facilitated Digital Credit on the Financial Health of Youth Borrowers in Kibera, Nairobi County, Kenya

The first objective of the study reviewed the effect of Mobile Network Operator Facilitated Digital Credit on The Financial Health. The study adopted descriptive, correlation and regression analysis and the findings are shown in this section.

Table 2. Mobile Network Operator Facilitated Digital Credit.

	N	Mean	Std. Deviation
I find mobile digital credits to be appealing due to their speed in delivery of the money.	351	4.4017	1.01187
I regularly utilize digital mobile credits as they offer more reasonable interest rates.	351	4.2991	1.05504
I utilize digital mobile credits due to their low penalties on failure to meet repayment schedule	351	4.3590	.98383
I routinely use digital mobile credit as they require minimal collateral requirements	351	4.4160	.96106
I use digital mobile credits as they have very minimal service interruption which enhances accessibility	351	4.3932	.97357
I prefer digital mobile credits as they provide instant processing of disbursal and repayments which improve user experience.	351	4.3704	.95297
I routinely utilize mobile digital credit as they provide cheaper transfer costs reducing my expenses	351	4.3504	.93488

The study findings showed strong agreement (Mean = 4.402, Dev = 1.012) the respondents find mobile digital credits to be appealing due to their speed in delivery of the money. Results showed strong agreement (Mean = 4.416, Dev = .961) the participants routinely use digital mobile credit as they require minimal collateral requirements. The respondent strongly agreed they routinely utilize mobile digital credit as they provide cheaper transfer costs reducing their expenses (Mean = 4.350, Dev = .935). The participant

also strongly agreed (Mean = 4.299) they regularly utilize digital mobile credits as they offer more reasonable interest rates.

4.2.1. Correlation Between Mobile Network Operator Facilitated Digital Credit and Financial Health

The research conducted Spearman rank correlation to establish the nature of relationship between the independent and dependent variables and findings are shown in Table 3.

Table 3. Correlation Test for Mobile Network Operator Facilitated Digital Credit and Financial Health.

			Financial Health	Mobile Network Operated
Spearman's rho	Financial Health	Correlation Coefficient	1.000	.541**
		Sig. (2-tailed)	.	.000
	Mobile Network Operated	Correlation Coefficient	.541**	1.000
		Sig. (2-tailed)	.000	.
		N	351	351

**. Correlation is significant at the 0.01 level (2-tailed).

The first objective of the study sought to effect of mobile network operator facilitated digital credit on the financial health of youth borrowers in Kibera. The results established there was a moderate and positive relation between mobile network operator facilitated digital credit and the financial health of the youth in Kibera ($r = .541^{**}$, $N (351)$, $sig = .000 < .05$).

4.2.2. Regression Between Mobile Network Operator Facilitated Digital Credit and Financial Health

The study applied simple linear regression to estimate the extent of the relationship between the mobile network operator facilitated digital credit and the financial health. The findings are shown in Table 4.

Table 4. Regression Test for Mobile Network Operator Facilitated Digital Credit and Financial Health.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.564 ^a	.318	.316	5.04303

a. Predictors: (Constant), Mobile Network Operated

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4140.454	1	4140.454	162.804	.000 ^b
	Residual	8875.808	349	25.432		
	Total	13016.262	350			

a. Dependent Variable: Financial Health

b. Predictors: (Constant), Mobile Network Operated

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	11.386	1.354		8.409	.000
	Mobile Network Operator	.554	.043	.564	12.759	.000

a. Dependent Variable: Financial Health

From the findings presented in Table 4 the regression model show that the value of R square is 0.318. This suggests that 31.8% variation in financial health among the Youth borrowers in Kibera, Nairobi Kenya can be explained by changes in mobile network-operated digital credit (repayment period, terms & conditions for repayment and instant processing). The remaining 67.2% suggests that there are other factors that can be used to explain variation in financial health among the youth that were not discussed in this study. The Analysis of Variance was used to test the significance of the independent variables on the dependent variables and to establish existence of variations in the variables. The F-ratio tests whether the overall regression model is a good fit for the data. The test result revealed F-statistic of 162.804 was greater than (F- critical = 1.162), with significance value at 0.000 ($P < 0.05$). This implied there was a positive and

significant relationship between mobile network operator facilitated digital credit and financial health. The coefficient results revealed a $\beta_1 = .554$; $t = 12.759$; $sig = .000 < .05$; which showed that changing mobile network operator facilitated digital credit factors by a unit will contribute to .554 improvement in the financial health of Youth borrowers in Kibera.

4.3. Effect of Bank Facilitated Digital Credit on the Financial Health of Youth Borrowers in Kibera, Nairobi County, Kenya

The second study objective reviewed the effect of bank facilitated digital credit on The Financial Health. The study adopted descriptive, correlation and regression analysis and the findings are shown in this section.

Table 5. Bank Facilitated Digital Credit.

	N	Mean	Std. Deviation
I have been using bank-credits since they provide additional savings benefits	351	4.1339	1.18888
I find bank provided digital credit to be reasonable as it can be repaid from my pay check	351	3.3390	1.17431
I prefer bank provided digital credits since they are formally accredited by the regulator i.e. Central Bank of Kenya	351	4.0769	1.09665
I find the collateral requirements placed on bank credit to be unreasonable for the youth	351	4.0513	1.19890
I access bank digital credits since the funds are accessible through my mobile account easily	351	4.0741	1.15644
I utilize the bank digital credits since the history of transactions will improve my credit limits	351	4.1140	1.18254
I routinely use the bank digital credit as they provide a savings platform which are key to financial growth	351	4.1225	1.12597

The analysis showed agreement among respondents (Mean = 4.134, Dev = 1.189) the respondents have been using bank-

credits since they provide additional savings benefits. The participants were in agreement (Mean = 4.123, Dev = 1.126) the youth borrowers routinely use the bank digital credit as they provide a savings platform which are key to financial growth. The results showed agreement among youth borrowers they find the collateral requirements placed on bank credit to be unreasonable for the youth (Mean = 4.051, Dev = 1.199). The respondents moderately agreed they find

the bank provided digital credit to be reasonable as it can be repaid from their pay check (Mean = 3.339, Dev = 1.174).

4.3.1. Correlation Between Bank Facilitated Digital Credit and the Financial Health

The research conducted Spearman rank correlation to establish the nature of relationship between the independent and dependent variables and findings are shown in Table 6.

Table 6. Correlation tests for Bank Facilitated Digital Credit and The Financial Health.

			Financial Health	Bank Facilitated Credit
Spearman's rho	Financial Health	Correlation Coefficient	1.000	.294**
		Sig. (2-tailed)	.	.000
		N	351	351
	Bank Facilitated Credit	Correlation Coefficient	.294**	1.000
		Sig. (2-tailed)	.000	.
		N	351	351

** . Correlation is significant at the 0.01 level (2-tailed).

The second objective analysed the effect of bank facilitated digital credit on the financial health. The results established there was a weak positive relationship between bank facilitated digital credit and the financial health of the youth in Kibera ($r = .294^{**}$, $N (351)$, $sig = .000 < .05$).

4.3.2. Regression Between Bank Facilitated Digital Credit and Financial Health

The study applied simple linear regression to estimate the extent of the relationship between the banks facilitated digital credit and the financial health. The findings are shown in Table 7.

The results in Table 7 of the regression model show that the value of R square is 0.128. This suggests that 12.8% variation in financial health among the Youth borrowers in Kibera, Kenya can be explained by changes in bank facilitated digital credit (collateral, regulatory requirements and interoperability to mobile wallets). The remaining 81.2%

suggests that there are other factors that can be used to explain variation in financial health among the youth borrowers that were not discussed in this study. The ANOVA analysis was used to test the significance of the independent variables on the dependent variables and to establish existence of variations in the variables. The F-ratio tests whether the overall regression model is a good fit for the data. The test result revealed F-statistic of 51.079 was greater than (F- critical = 1.162), with significance value at 0.000 ($P < 0.05$). This implied there was a positive and significant relationship between banks facilitated digital credit and financial health. The coefficient results revealed a $\beta_2 = .303$; $t = 7.147$; $sig = .000 < .05$; which showed that changing bank facilitated digital credit factors by a unit will contribute to .303 improvement in the financial health of youth borrowers in Kibera.

Table 7. Regression Test for Bank Facilitated Digital Credit and Financial Health.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.357 ^a	.128	.125	5.70388

a. Predictors: (Constant), Bank Facilitated Credit

ANOVA ^a					
Model		Sum of Squares	df	Mean Square	F
1	Regression	1661.823	1	1661.823	51.079
	Residual	11354.439	349	32.534	
	Total	13016.262	350		

a. Dependent Variable: Financial Health

b. Predictors: (Constant), Bank Facilitated Credit

Coefficients					
Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	t
1	(Constant)	19.850	1.223		16.224
	Bank Facilitated Credit	.303	.042	.357	7.147

a. Dependent Variable: Financial Health

4.4. Effect of Fintech Facilitated Digital Credit on the Financial Health of Youth Borrowers in Kibera, Nairobi County, Kenya

The third objective of the research focused on an

evaluation of the effect of fintech facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya. The study applied descriptive and inferential analysis tests.

Table 8. Fintech Facilitated Digital Credit.

	N	Mean	Std. Deviation
I regularly access Fintech digital credits provided by third-party Fintechs due to their ease of accessibility	351	4.1396	1.16639
I prefer Fintech digital credits as they are unsecured thus improving their accessibility	351	3.9801	1.23156
I utilize Fintech credits as there is a wider market thus, I can use the one with the lowest interest rates	351	4.0313	1.17188
I use Fintech digital credits as they have lower fees as compared to other digital credits	351	3.9658	1.23009
I routinely use Fintech digital credits due to their faster application process	351	3.9658	1.16569
I prefer using Fintech digital credits as they provide a market for peer lending which improves accountability among borrowers	351	3.9259	1.28071
I utilize Fintech digital credits as they offer more flexibility in terms of the credit limits and repayment periods.	351	3.9744	1.23609

The respondents agreed (Mean = 4.139) they regularly access Fintech digital credits provided by third-party Fintechs due to their ease of accessibility. The analysis showed agreement among participants they utilize Fintech credits as there is a wider market thus, they can use the one with the lowest interest rates (Mean = 4.031, Dev = 1.172). The study noted agreement that respondents routinely use Fintech digital credits due to their faster application process (Mean = 3.966, Dev = 1.166). The respondents agreed they

prefer using Fintech digital credits as they provide a market for peer lending which improves accountability among borrowers (Mean = 3.926, Dev = 1.281).

4.4.1. Correlation Between Fintech Facilitated Digital Credit on the Financial Health

The research conducted Spearman rank correlation to establish the nature of relationship between the independent and dependent variables and findings are shown in Table 9.

Table 9. Correlation Test for Fintech Facilitated Digital Credit and the Financial Health.

		Financial Health	Fintech Facilitated Credit
Spearman's rho	Financial Health	Correlation Coefficient	1.000
		Sig. (2-tailed)	.395**
	Fintech Facilitated Credit	Correlation Coefficient	.395**
		Sig. (2-tailed)	.000
		N	351

** . Correlation is significant at the 0.01 level (2-tailed).

The third objective analysed the effect of Fintech facilitated digital credit on the financial health. The results established there was a weak and positive relationship between bank facilitated digital credit and the financial health of the youth in Kibera ($r = .395^{**}$, $N (351)$, $sig = .000 < .05$).

4.4.2. Regression Between Fintech Facilitated Digital Credit and the Financial Health

The study applied simple linear regression to estimate the extent of the relationship between the Fintech facilitated digital credit and the financial health. The findings are shown in Table 10.

The findings of the regression tests on Table 10 show that the value of R square is 0.202. This suggests that 20.2% variation in financial health among the Youth borrowers in Kibera, Kenya can be explained by changes in Fintech facilitated digital credit (electronic processing, Peer 2 peer lending and intermediary

market). The remaining 79.8% suggests that there are other factors that can be used to explain variation in financial health among the youth borrowers that were not discussed in this study. The ANOVA analysis was used to test the significance of the independent variables on the dependent variables and to establish existence of variations in the variables. The F-ratio tests whether the overall regression model is a good fit for the data. The test result revealed F-statistic of 88.351 was greater than (F- critical = 1.162), with significance value 0.000 ($P < 0.05$). This implied there was a positive and significant relationship between fintech facilitated digital credit and financial health. The coefficient results revealed a $\beta_3 = .351$; $t = 9.400$; $sig = .000 < .05$; which showed that changing Fintech facilitated digital credit factors by a unit will contribute to .351 improvement in the financial health of youth borrowers in Kibera.

Table 10. Regression Test for Fintech Facilitated Digital Credit and Financial Health.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.449 ^a	.202	.200	5.45542

a. Predictors: (Constant), Fintech Facilitated Credit

ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2629.466	1	2629.466	88.351	.000 ^b
	Residual	10386.796	349	29.762		
	Total	13016.262	350			

a. Dependent Variable: Financial Health

b. Predictors: (Constant), Fintech Facilitated Credit

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	18.490	1.085		17.034	.000
	Fintech Facilitated Credit	.351	.037	.449	9.400	.000

a. Dependent Variable: Financial Health

4.5. Multiple Regression Between Digital Credit and The Financial Health of Youth Borrowers in Kibera, Nairobi County, Kenya

The study estimated the overall regression model to

determine the magnitude of effect of mobile-network operated credit, bank facilitated digital credit and fintech facilitated digital credit on the financial health of youth borrowers. The results are shown in Table 11.

Table 11. Overall Multiple Regression Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.618 ^a	.382	.377	4.81523	2.206

a. Predictors: (Constant), Fintech Facilitated Credit, Mobile Network Operated, Bank Facilitated Credit

b. Dependent Variable: Financial Health

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4970.572	3	1656.857	71.458	.000 ^b
	Residual	8045.690	347	23.186		
	Total	13016.262	350			

a. Dependent Variable: Financial Health

b. Predictors: (Constant), Fintech Facilitated Credit, Mobile Network Operated, Bank Facilitated Credit

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.131	1.429		5.689	.000
	Mobile Network Operated	.427	.047	.435	9.039	.000
	Bank Facilitated Credit	.065	.041	.077	1.576	.116
	Fintech Facilitated Credit	.190	.038	.243	5.009	.000

The overall regression findings of the regression tests on Table 11 show that the value of R square is 0.382 which implied that 38.2% variation in financial health among the Youth borrowers in Kibera, Kenya can be explained by changes in digital credit (mobile-network operated credit, bank facilitated digital credit and fintech facilitated digital credit). The remaining 61.8% suggests that there are other factors that can be used to explain variation in financial health among the youth borrowers that were not discussed in this study. The ANOVA analysis was used to test the significance of the independent variables on the dependent variables and to establish existence of variations in the variables. The F-ratio tests whether the overall regression model is a good fit for the data. The test result revealed F-statistic of 71.458 was greater than (F- critical = 1.162), with significance value 0.000 ($P < 0.05$). This implied there was a positive and significant relationship between digital credit

and financial health among youth borrowers in Kibera.

The resulting regression model for the research was;

$$Y = 8.131 + .427X_1 + .065X_2 + .190X_3 \quad (4)$$

To establish the effect of mobile network operator facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya. The coefficient results revealed a $\beta_1 = .427$; $t = 9.039$; $\text{sig} = .000 < .05$; which showed that changing mobile network operator facilitated digital credit factors by a unit will contribute to .427 improvement in the financial health of Youth borrowers in Kibera. To establish the effect of bank facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya. The coefficient results revealed a $\beta_2 = .065$; $t = 1.576$; $\text{sig} = .116 > .05$; which showed there was no significant effect of bank-facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi

County, Kenya. To establish the effect of fintech facilitated digital credit on the financial health of youth borrowers in Kibera, Nairobi County, Kenya. The coefficient results revealed a $\beta_3 = .190$; $t = 5.009$; $\text{sig} = .000 < .05$; which showed that changing Fintech facilitated digital credit factors by a unit will contribute to .190 improvement in the financial health of youth borrowers in Kibera.

5. Conclusion

5.1. Mobile Network Operator Facilitated Digital

Regarding the first objective, this study concludes that mobile network operator facilitated digital credit has a significant and positive effect on the borrower's financial health. The study concludes that mobile operator facilitated loans are fast and easily accessible which increases their effectiveness to the user. Further, key to their use is the minimal collateral requirements which reduces the stress associated with accessing official loans. The aspect of collateral requirement means that the mobile loans are the cheapest and most affordable among all the other forms of digital credit. The study also concludes that mobile network operator facilitated digital credit have cheap transfer costs and have reasonable interest rates which has been a key determinant of their adoption and of the user's overall financial well-being. The final conclusion that can be drawn from the findings is that the repayment period associated with mobile loans is usually flexible and this improves the borrower's repayment capacity, despite the interest rates being too high for unsuspecting consumers.

5.2. Bank Facilitated Digital Credit

The second objective was on bank facilitated digital credit and the study concludes that bank facilitated digital credit has a positive and significant effect on the financial health of youth borrowers. The study concludes that bank facilitated digital credit enhances user's health by providing complementary savings and money transfer roles guaranteed under formal banks. The study also concludes that the interoperability of digital bank credit has increased access of digital loans to users with different kinds of mobile phones. However, the study concludes that bank facilitated digital credit has high collateral requirements which can have a negative impact on the borrower's repayment capacity. The study also concludes that this type of digital credit is associated with high interest rates which can deter low-scale borrowers from taking large loans, restricting them to small investments.

5.3. Fintech Facilitated Digital Credit

The final objective was on fintech facilitated digital credit and its impact on youth's financial health and from the findings, the study concludes that these credits have a positive and significant effect on the financial well-being of the user. The study concludes that fintech credit has little to formality which improves their affordability and accessibility

to users. The study also determined that there is a high degree of market maturity and demand for fintech financing models which increases their ease of access. The study also concludes that fintech loans have limited requirements which makes the loan application process faster and more suitable to youth borrowers. However, the study concludes that some fintech products have collateral requirements which lock out certain categories of low-income earners. The study also concludes that fintech credit can be designed to meet the needs of groups of individuals with similar needs and this improves their functionality.

6. Recommendations

6.1. Mobile Network Operator Facilitated Digital Credit

The study finds that mobile network operator facilitated digital credit has significant positive effects on the borrower's health and that improving MNO facilitated digital credit repayment period, terms & conditions for repayment and instant processing can result in a 31 percent improvement in the financial health of the borrower. The study recommends that mobile money operators that provide digital loans reduce their operation rates considering they have high interest rates for the small loans they offer. The study also recommends that MNOs introduce products that can address the collective needs of a group of people with similar needs. Further, the study recommends that suitable data protection regulations be developed to reduce risks associated with data sharing and to guarantee data security to users.

6.2. Bank Facilitated Digital Credit

The study provides evidence that bank facilitated digital credit has significant positive effects on the borrower's health and that improving the collateral, regulatory requirements and interoperability to mobile wallets of bank facilitated digital can result in a 12.8 percent improvement in the borrower's financial health. The study concludes that bank facilitated digital credit is not as inclusive due to its strict requirements for individuals seeking to access large amounts of loans. The study recommends improved client assessment to increase borrower's ability to access funds without long-term history as this characterizes most youth borrowers. The study also finds that some of the bank facilitated digital credits lack interoperability features and the study recommends that the firms make attempts to guarantee interoperability between devices as this would significantly improve access for borrowers with older phones.

6.3. Fintech Facilitated Digital Credit

The study also finds that fintech facilitated digital credit has significant positive effects on the borrower's health and that improving electronic processing, Peer 2 peer lending and intermediary market in fintech facilitated digital can result in a 20.2 percent improvement in the borrower's financial health. The study notes that fintech credit also lacks interoperability functions and this should be improved upon

to improve accessibility. The study also calls for the development of progressive peer to peer regulations that would improve the penetration of these loan devices that have been identified as key to young entrepreneurs. The study also recognizes that some collateral requirements lock out potential borrowers and the study recommends that some of these collateral requirements be adjusted according to the category of risk associated with the user.

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