An Empirical Analysis of the Determinants of Digital Credit Default in Kenya

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DOI: https://doi.org/10.47772/IJRISS.2026.100300303

Received: 12 March 2026; Accepted: 18 March 2026; Published: 06 April 2026

ABSTRACT

Kenya has a vibrant Digital Financial Services sector characterized by innovative and technology-driven products. The mobile money revolution has pioneered financial inclusion through services such as M-PESA and recently through digital credit providers such as M-Shwari, Tala and Branch among others. This paper sought to examine the determinants of digital credit default in Kenya. The objectives of the study were: i) to determine how digital illiteracy influences loan default, ii) to analyze the correlation between betting behavior and digital credit distress and iii) to assess the impact of economic shocks on the likelihood of default. The study utilized a quantitative, cross sectional research design using secondary data from the 2024 FinAccess survey in Kenya to examine the relationship between borrower characteristics and the probability of default. From a sampling frame of 20872 borrowers, stratified sampling technique was used to identify 6571 digital borrowers that formed the sample size. A probit model was estimated using maximum likelihood estimation on E-views. Findings indicate a marginal effect for illiteracy, showing that an illiterate borrower is 4.5 per cent more likely to default compared to a digitally literate one. Similarly gambling and sickness yielded 8.4 per cent and 13 per cent respectively on the probability of default. On demographic characteristics, male borrowers were found to be riskier than female, with a coefficient value of -0.037377, implying that being male increases default risk by 3.7 per cent. Income had a negative effect on default, implying that higher income reduces the probability of default. Based on these findings, the study concludes that credit default is largely contributed by a combination of factors including financial literacy, sickness, gambling and income level. The study recommends that credit reference bureau listing mechanism be reviewed to account for verifiable shocks such as illness and that gambling should be considered as one of the eligibility criteria for digital lending since it enhances default rate.

Keywords: Digital Credit, Loan Default, Financial Inclusion

INTRODUCTION

Kenya has a vibrant Digital Financial Services sector characterized by innovative and technology driven products, with scholars such as Mwaura (2023) terming Kenya as the 'silicon savannah'. The mobile money revolution has pioneered financial inclusion through services such as M-PESA and recently through digital credit providers such as M-Shwari, Tala and Branch. Through mobile-based lending platforms, borrowers can apply for, receive, and repay loans within minutes without the need for collateral or physical interaction with financial institutions. This innovation has contributed to increased financial inclusion, particularly among low-income households and individuals in the informal sector who often lack access to conventional financial services.

As a result of positive developments in the digital mobile sector, 97 per cent of all loans disbursed between 2019 and 2023 were done digitally, (Sommer et al., 2025). According to the 2024 FinAccess Household Survey, formal financial inclusion in Kenya stands at 84.8 per cent mainly driven by digital technology which nearly closed the gender gap in formal access. This figure suggests that Kenya is experiencing economic empowerment through using technology to give many previously unbanked Kenyans a chance at accessing capital. At the same time, 9.9 percent of Kenyan adults remain financially excluded, with rural youth forming nearly half of this group.

The key barriers to digital financial exclusion include lack of mobile phone at 64.1 percent as well as lack of Identity Card, at 51.5 percent. Uptake of bank accounts and SACCOs has notably increased whereas digital services recorded mixed results. Mobile money, mobile bank and Fuliza recorded moderate growth while digital MFIs, including 'buy now pay later' (hire purchase) have recorded increased uptake following the regulation of Digital Credit Providers by the Central Bank.

In 2021, the Kenya government initiated regulatory and supervisory reforms for digital lending. Thus, the Central Bank of Kenya (CBK) was empowered through an Act of Parliament, to license and oversee digital lenders. Subsequently, in 2022, the CBK issued the Central Bank of Kenya (Digital Credit Providers-DCPs) Regulations, which required all DCPs to apply to the CBK for a license. This was in a bid to regulate this sector following a public outcry from Kenyans to be protected from digital lenders who were operating like shylocks.

While the innovation and move to digital lending has significantly increased formal financial inclusion, the move has also fostered an environment where lenders practice predatory behavior and encourage over-indebtedness. The predatory practices, characterized by exorbitant interest rates, hidden fees and aggressive debt shaming have led to public humiliation, mental stress and negative credit bureau listings. This has created a debt trap where people are trapped in almost never-ending cycle of debt and raises the question on how digital lending has affected the financial health of the youth and low-income earners, who are the majority of people affected by over-indebtedness (Mwaura, 2023).

The digital credit landscape has changed from a tool to improve business liquidity to a survival mechanism for consumption and fuel for high-risk behaviors such as betting. This has led to marginalized groups being included in the financial system but under unequal and exploitative terms, which is referred to as predatory inclusion. In contrast to traditional microfinance, digital lending relies on unclear algorithms, high interest rates in excess of 100% and aggressive debt collection tactics (Mwaura, 2023). This paper posits that the current model of digital lending is designed to attract and trap vulnerable borrowers. Therefore, this study seeks to determine the extent to which digital illiteracy, betting behaviors and economic shocks drive the probability of loan default in Kenya.

Loan default in the context of digital credit refers to the failure of borrowers to repay their loans within the agreed repayment period. Debt distress is a major challenge, with 16.6 percent of borrowers completely defaulting on their loans compared to 10.7 percent in 2021. The prevalence of digital credit default has become a growing concern among policymakers, lenders, and financial regulators because it threatens the sustainability of digital lending platforms and the stability of the broader financial system. According to the Central Bank of Kenya, default rates among digital borrowers in Kenya are alarmingly high, especially for small-value loans. For instance, data from the Central Bank of Kenya shows that loans below KES 1,000 have recorded non-performing loan ratios of over 80 percent, indicating that a large proportion of borrowers fail to repay such loans. The high default rate is on account of high interest rate, short repayment periods and aggressive, unethical debt collection practices, CBK (2024).

Statement of the Problem

The introduction of digital credit was intended to smoothen consumption and provide capital for micro-enterprises and individuals. The structure was such that credit was extended to those who had the highest credit worthiness and could repay. Recent trends have strayed far away from this with digital lenders solely focused on profit maximization and have extended the services to borrowers who lack the capacity to fully comprehend the full cost of their borrowing, as well as to people who are borrowing for non-productive reasons such as gambling (Mwaura, 2023).

Loan default could be strategic on the part of the borrower and could also be due to structural shocks or exploitation by the lender. Current studies focus on revealing who is likely to borrow and for what reasons they are borrowing. A gap exists in expounding on why some borrowers default. This study addresses this gap by suggesting that the high default rates are not by people choosing not to repay but rather predatory factors; the exploitation of illiterate borrowers and the facilitation of betting addictions. The aim is to establish whether the Credit Reference Bureaus (CRBs) could wrongfully be punishing victims of circumstance such as in the case of

structural shocks and not malicious defaulters. The current regulatory framework lacks the ability to combat these predatory practices. It is imperative that the efficacy of the current regulatory measures surrounding digital lending be aligned to the economic reality of many vulnerable borrowers so that digital lending can work as a tool to spur economic growth and not to suffocate it.

LITERATURE REVIEW

According to Izaguirre, et al (2025), global digital credit is rapidly transforming financial inclusion by offering instant, smartphone-based, small-value loans, with the global fintech credit market projected to reach 4.9 trillion by 2030. It uses data-driven algorithms (like credit scores and transaction history) to assess borrower risk, allowing for rapid, automated approval. While providing crucial working capital for small businesses and individuals, it introduces risks such as over-indebtedness, data misuse, and high-interest rates, requiring stronger consumer protection frameworks. Indeed, the digital credit market is rapidly evolving, shaped by new players, technologies, and partnerships. While this evolution brings financial, experiential, and welfare benefits to borrowers, it also introduces heightened consumer risks. Financial Services Providers (FSPs) may exploit behavioral biases, exposing consumers to fraud, data misuse, lack of transparency, inadequate redress mechanisms, and unfair treatment. These risks, particularly in contexts with fragmented consumer protection frameworks, can lead to over-indebtedness and deteriorating financial health.

Asror et al (2022) examined the macroeconomic determinants of loan defaults using US data on peer-to-peer lending from 2008 – 2019. Their results showed a significant impact of interest rate and inflation on the probability of loan default, consistent with theoretical predictions of the traditional banking literature (Bester, 1985; Stiglitz and Weiss, 1981, 1992). They also found that the impact of interest rate on the probability of default was significantly higher for loans with lower ratings.

In Sub-Saharan Africa, there has been a considerable increase in FinTech lending adoption amongst borrowers in the last decade, thanks to the success of mobile money initiatives in this region (OECD, 2024). While digital credit usage has increased over the last decade, overall credit penetration in Africa remains low against the backdrop of higher default rates associated with digital lending. Average credit penetration rate of 6 per cent for Kenya and 9 per cent for South Africa is low compared to the global average of 19 per cent (McKinsey, 2022[4]). This low penetration calls for a responsible ecosystem approach, one in which authorities, providers, and other stakeholders collaborate to establish customer-centric rules and practices and strengthen their commitment and capability to mitigate and address consumer risks (Duflos et al. 2024).

Kenya's "Silicon Savannah" branding showcases rapid digital adoption, with over 5,000 government services digitized by 2026, boosting fintech and innovation through initiatives like the National Digital Master Plan 2022-2032. However, this shift risks "digitizing marginalization," as rural, low-income, and informal settlement populations face exclusion due to the digital divide, inadequate infrastructure, and limited digital literacy, often deepening existing socioeconomic inequalities rather than resolving them.

Gambling in Kenya has experienced explosive growth, with an estimated 766.5 billion shillings (approximately $5.9 billion) staked on betting in 2024, averaging over Sh2 billion daily. The industry is largely driven by mobile technology, with about 10 million Kenyans engaging in daily betting. While some industry figures have challenged this total, the sector remains a massive, rapidly growing economic force

RESEARCH METHODOLOGY

Research Design

This paper utilized a quantitative, cross sectional research design using secondary data from the 2024 FinAccess survey to examine the relationship between borrower characteristics and the probability of default. The purpose is to establish the direction in which predictor variables affect loan default as well as establish the statistical significance of the predictor variables.

Model Specification

Due to the binary nature of the dependent variable (Default or No Default), a probit model was estimated using a maximum likelihood estimation on E-Views. The error is normally distributed and this ensures that the predicted probabilities lie between 0 and 1. The estimated coefficients will be used to calculate the marginal effects of the dependent variables on the independent variable.

The econometric equation is:

$$P(Default = 1) = \phi\ (\beta_0 + \beta_1 X_{Illiteracy} + \beta_2 X_{Betting} + \beta_3 X_{Shock} + \beta_4 X_{Gender} + \epsilon)$$

Population and Sampling Technique

The population under study from the 2024 FinAccess survey includes Kenyan adults aged 16 and above. For this specific paper, the total dataset consisting of 20,872 respondents was filtered to only include individuals who have actively engaged in digital borrowing. Only the respondents who have used mobile banking loans (KCB M-PESA, M-Shwari), digital loan apps (Tala, Branch) and mobile money overdraft (Fuliza) were included in the study. The study employed stratified cluster sampling technique to identify 6,571 digital borrowers. This method ensured even representation across counties and settlement divides.

Data collection techniques

A structured questionnaire was issued to the population and used to collect data. The questionnaire captured information on age, sex, place of residence, whether one bets, literacy, shocks such as illness, repayment period, income and default status among other variables.

Definition of Variables

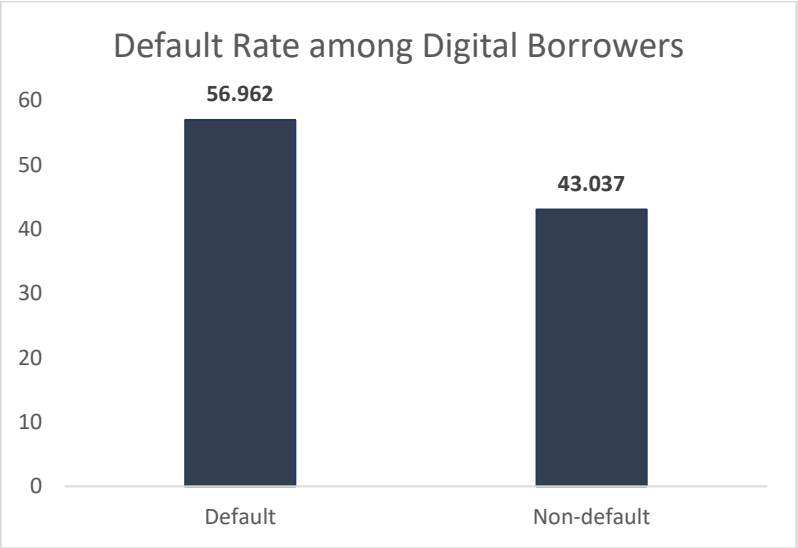
Variable Type	Variable	Source	Description
Dependent	Default	E2F	Binary: 1 if borrower missed payment/paid late; 0 if paid on time.
Independent	Digital illiteracy	B2G	Binary: 1 if borrower could not correctly interpret SMS cost; 0 if they could interpret.
Independent	Betting	B2B	Binary: 1 if engaged in betting/gambling in last 12 months; 0 they did not bet/gamble.
Independent	Sickness shock	R2A	Binary: 1 if experienced major sickness/health shock; 0 otherwise.
Control	Income	B3Ii	Monthly income in Ksh.
Control	Gender	A13	Binary: 1 if Male; 0 if Female.

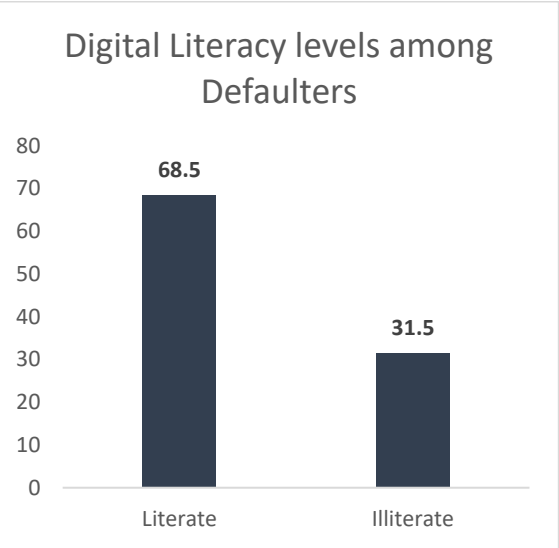
Research Ethics

The study used the published 2024 dataset from FinAccess which is anonymized secondary data. The data does not contain any personally identifiable information such as names or phone numbers were accessed or analyzed. The data was utilized for academic reasons to analyze aggregate trends in default behavior among borrowers from digital credit providers. Further, the interpretation of results did not stigmatize any particular group but rather focused on revealing the structural determinants of default.

RESULTS AND DISCUSSION

The bar charts below show the levels of illiteracy among defaulters as well as the default rate among digital borrowers.





Descriptive Statistics

From the 6,571 respondents who have used digital credit facilities, 3,743 reported having defaulted on their loans. This represents 56.9 per cent of the sample, meaning that more than half of all borrowers of digital loans default. Even more worrying is that 31.5 per cent of borrowers were identified as illiterate with 55.3 per cent of illiterate borrowers reported as having defaulted on their loans suggesting a correlation between being literate and defaulting on loans.

Dependent Variable: DEFAULT
Method: ML - Binary Probit (Newton-Raphson / Marquardt steps)
Date: 12/03/25 Time: 12:53
Sample: 1 6570
Included observations: 6570
Convergence achieved after 3 iterations
Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.250872	0.034075	7.362391	0.0000
LITERACY	-0.111565	0.041435	-2.692552	0.0071
BETTING	0.209990	0.044300	4.740206	0.0000
SICKNESS	0.325899	0.039608	8.228197	0.0000
MALE	-0.037377	0.035087	-1.065288	0.2867
INCOME	-9.11E-06	8.76E-07	-10.40095	0.0000

McFadden R-squared	0.023461	Mean dependent var	0.569711
S.D. dependent var	0.495154	S.E. of regression	0.487053
Akaike info criterion	1.336553	Sum squared resid	1557.117
Schwarz criterion	1.342754	Log likelihood	-4384.576
Hannan-Quinn criter.	1.338697	Deviance	8769.153
Restr. deviance	8979.827	Restr. log likelihood	-4489.913
LR statistic	210.6740	Avg. log likelihood	-0.667363
Prob(LR statistic)	0.000000		

Obs with Dep=0	2827	Total obs	6570
Obs with Dep=1	3743		

Probit Model Results

Note: ϕ Marginal effects are approximated at the mean using the standard normal density factor of 0.4.

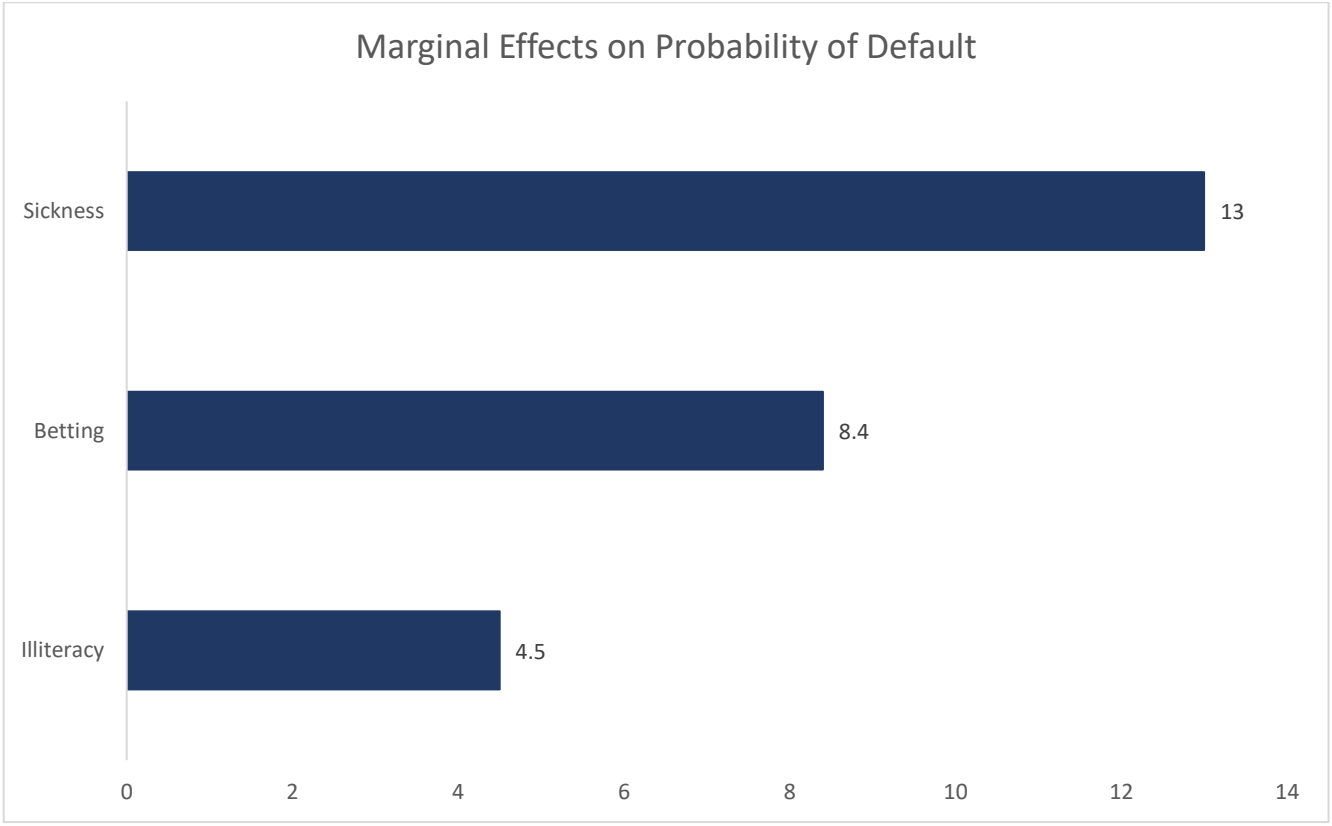
e.g. coefficient*0.4 = marginal effect

Interpretations

Coefficient	Marginal Effect
-0.111565	4.5
0.209990	8.4
0.325899	13
-0.037377	0
-9.11E-06	0

Variable	Co-efficient	Interpretation	Significance
Literacy	-0.111565	A one-unit increase in literacy score reduces default probability by about 4.5 percentage points	High
Betting	0.209990	Betting increases default probability by about 8.4 percentage points	High
Sickness	0.325899	Sickness raises default probability by about 13 percentage points	High
Male	0.037377	Although men appear slightly more likely to default than women, the effect is statistically insignificant	Insignificant
Income	-9.11E-06	Higher income reduces the probability of default, but the effect per shilling is too small.	Insignificant

DISCUSSION OF FINDINGS



The cost of illiteracy

From the binary Probit model, the marginal effect for literacy is -4.5. This implies that a borrower who cannot interpret transaction costs is 4.5 per cent more likely to default compared to a digitally literate borrower. This result supports the earlier finding by Mwaura (2023) that digital lenders are engaging in predatory practices by for example providing obscure terms and conditions when issuing a loan. Borrowers could be entrapped into obligations that are unfavorable for them because they do not understand. This finding highlights a gap in consumer protection where illiterate borrowers may be set up for failure by exploitative lenders knowing that such borrowers do not fully understand the lending contracts.

Gambling/betting traps

The marginal effect for betting is 8.4*. This suggests that engaging in betting increases the probability of default by 8.4 per cent. This confirms a hidden but very dangerous connection between digital lending and gambling /online betting. Proponents of digital lending who insist that the credit is going to support entrepreneurship or investment often ignore the real problem that is poor consumption vices such as betting in this case. The liquidity granted by the applications like Tala could be diverted into high-risk gambling and thus a cycle ensues of people using credit to fund low probability bets. A failed bet almost guarantees that one will default.

*The marginal effect of gambling is susceptible to social desirability bias where respondents may not be fully comfortable admitting to the behavior since it is socially frowned upon. The stigma associated with gambling and betting means that there was severe underreporting in this metric. Consequently, the finding that gambling increases the probability of default by 8.4 should be interpreted as a conservative lower bound estimate.

Sickness shocks

The marginal effect for sickness is 13, the highest among the selected variables. This implies that experiencing a major health issue after accessing a digital credit facility increases the probability of default by 13 per cent. Unlike betting which is a choice, a sudden illness is a misfortune and surprisingly, it is the strongest predictor of default, even more than gambling which is entirely within the control of the borrower. This finding means that the current credit reporting system may require more information given the impact of sickness shocks on default. The negative outcome is that Kenyans are locked out of the lending system for experiencing misfortune. The finding also highlights the need for differentiation among defaulters by reason of default; For example, someone blacklisted because of medical illness should not be excluded from the financial system together with the person blacklisted for gambling.

Demographic characteristics

Gender had a small marginal effect of -0.037377. This suggests that men are riskier borrowers and being a man increases the default risk by 3.7%. This could be due to men being involved in risky financial vices such as gambling (Jagodziński, 2024).
Income had a negative marginal effect, suggesting that higher income earners are less likely to default compared to low-income earners. It is important, however, to note that the coefficient is extremely small, indicating that credit distress is an issue that cuts across income levels and is therefore not a problem associated income levels.

Research Limitations

The overall explanatory power of the study remains limited by the nature of the secondary dataset. Critical determinants of loan default such as the precise loan amount, the interest rate on digital loans and the specific repayment lengths (monthly categories were used and not actual number of days, which most digital credit facilities use when determining repayment period) were not covered in the 2024 FinAccess survey. Future research should utilize proprietary data from the digital credit providers to incorporate the missing variables in order to provide a more comprehensive predictive model on the determinants of digital credit default.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This paper sought to establish the reasons for default on digital credit in Kenya. Using the data from the 2024 FinAccess survey, the study has empirically demonstrated that default is largely contributed by digital illiteracy with respect to loan characteristics as well as genuine misfortune such as illness.

The digital lending system fails to serve the borrower when the inability to understand the terms of the loan increases one's probability of default by 4.5. This may also suggest predatory lending by the digital lenders. Some borrowers transfer loans from digital lending platforms to betting which results in an increase of the probability of default by 8.4. The realization that sickness shocks increase the probability of default by 13 implies that digital credit is no longer a safety net against harsh economic times but rather a trap door into financial distress where one serious illness can lead a borrower into being blacklisted with long-term exclusion from financial services given the current model of reporting default with credit reference bureaus.

Recommendations

To address the problem of predation and unfair credit rating bureau listings, there needs to be a robust and urgent change in the regulatory framework surrounding digital credit. This should include mandatory full disclosure interfaces to address borrowers defaulting due to illiteracy. It is proposed that the Central Bank of Kenya should require all digital lending platforms to display the total cost of credit in bold before disbursing a loan. This will enable borrowers to be fully aware of the amount they will repay as principal and interest before taking out a loan.

It is also proposed that credit reporting should be done in a compassionate manner. To address the issues of borrowers defaulting due to occurrence of a serious illness, the CRB listing mechanism should be updated such that borrowers with verifiable shocks such as medical or natural disasters can be given a grace period before being blacklisted. It is inhumane to criminalize misfortune and such a regulation will ensure only the deserving, deliberate defaulters are listed.

Finally, we propose stricter regulations on online gambling. Since it is difficult to dictate how one should use credit extended to them, there needs to be concerted efforts from the lending institutions to reduce the use of credit on financial vices. The digital lenders could for example ban the transfer of funds from their loan wallets into betting wallets. They could also collaborate with betting institutions to flag and limit lending to individuals with high betting transactions.

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