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Determinants of Informal Finance Use in Kenya

Julius Bett

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Determinants of Informal Finance Use in Kenya

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Private Sector Development Division
Kenya Institute for Public Policy
Research and Analysis

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Abstract

The financial services sector plays a pivotal role in Kenya's development by providing better intermediation between savings and investments and mobilization of capital required to implement Vision 2030 projects. However, Kenya's financial system is dualistic in nature, with a dominant informal finance over formal finance. Informal finance entails financial activities that occur outside the immediate control of government agencies. This study examines the role played by an individual's attitude towards formal finance and internal business regulation, while controlling individual socio-economic characteristics in determining use of informal finance. It uses data from FinAccess 2009 National Survey. To examine the hypothesized factors, the study used Maximum Likelihood technique to estimate a logit model. The study reveals that negative attitude towards formal finance and internal business regulations play a key role in promoting use of informal finance. Formal institutions in conjunction with the Central Bank of Kenya (CBK) should address the negative attitude by adopting an effective regulatory framework, policies and reforms that would lead to effective transformation of informal to formal finance. These regulations should filter favourably into informal systems, allowing transformation of informal institutions into formal. In addition, formal institutions should address customer needs on a case by case basis, rather than have standardized contracts that may not suit all individuals, hence enhance their flexibility. They should also rein on the escalating fees and other transaction costs that enhance a negative attitude. Similarly, the CBK in conjunction with the Kenya Bankers Association (KBA) and banking institutions should re-evaluate the know your customer (KYC) requirements with a view to weeding out excessive internal regulations that drive away individuals to using informal finance, without compromising on due diligence. Future studies should focus on linkages between formal and informal finance to determine whether they are complementary or substitutes. Further, data collection should be enhanced in order to support evidence-based policy formulation.

Abbreviations and Acronyms

ASCA	Accumulating Savings and Credit Associations
CBK	Central Bank of Kenya
FSD	Financial Sector Deepening
GDP	Gross Domestic Product
KBA	Kenya Bankers Association
KYC	Know Your Customer
MFI	Microfinance Institutions
SACCOs	Savings and Credit Cooperatives
SASRA	SACCO Regulatory Authority
SCA	Savings and Credit Associations
SME	Small and Micro Enterprises
ROSCAs	Rotating Savings and Credit Associations
RUM	Random Utility Model

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1. Introduction

1.1 Background of Informal Finance in Kenya

A well functioning financial services sector plays a pivotal role in Kenya's development by providing better intermediation between savings and investments and mobilization of capital required to implement Vision 2030 projects. However, Kenya's financial system is dichotomized into formal and informal finance. "Informal finance" refers to financial transactions that take place beyond the functional scope of a country's banking and other financial sector regulations (Burkett, 1988; Aryeetey, 2003; Yaldiz, Altunbas and Bazzana, 2012). These include savings mobilization units that do little or no lending; lending units that seldom engage in savings mobilization; and units that combine deposit mobilization with some amount of lending. Informal financial systems take various forms, but prominent ones include Savings and Credit Cooperatives (SACCOs); Savings and Credit Associations (SCAs); and Rotating Savings and Credit Associations (ROSCAs). Others are money lenders, traders, grain millers, employers, relatives and friends. For purposes of this study, informal finance use refers to uptake of credit financial services and saving in informal financial systems.

Informal finance is not only a Kenyan phenomenon but a common feature in developing countries where inefficient regulations and high costs of finance coexist with structural problems in financial markets, stoking a negative attitude towards formal finance. This implies that informality is partly the result of inefficient public policies and the failure of public institutions to protect and promote an efficient and equitable market economy. Africa has a rich history of informal financial arrangements emerging from the African socio-economic fabric. Studies in China, Nigeria, Ghana, Malawi and Tanzania reveal that there has been substantial growth in the activities of the informal financial sector since reforms began in many countries (Aryeetey, 1998; Ayyagari, Demirgüç-Kunt and Maksimovic, 2008).

In West African countries such as Ghana, Cote d'Ivoire and Togo, mobile bankers generally known as *susu* or *esusu* collectors with similar characteristics to ROSCAs and SCAs are common. In addition, informal finance arrangements known as *Tontines* are widespread in Senegal. *Iddir* and *Iqqub* informal financial groups operate in Ethiopia, while *Uchamaa* in Tanzania has facilitated growth of various types of informal finance groups. Just like other African countries, Kenya's financial sector is dichotomized into formal and informal. Informal financial arrangements in the country include: ROSCAs, money lenders, SCAs, merry-go-rounds and more recently, *chamas*. Generally, all these arrangements exist to mobilize savings and/or channel funds to investable areas of the economy,

thus making access to finance less difficult.

The operations of informal finance are such that any number of people may agree to contribute an agreed sum of money regularly into a pool, which is then given to each member as a lump sum in turn. Users of informal finance are expected to keep their membership by continuously saving or repay loans by continuing to make their regular contributions. Some of the common features of these groups are that they heavily rely on social networks, charge varying interest rates different from formal interest rates, offer small and short-term loans, demand small or no collateral, and are not regulated by government agencies. With the SACCO Societies Regulatory Authority (SASRA) in place, some of these groups ultimately form SACCOs.

In the last decade, the impetus of financial reforms in Kenya has been growing, with emphasis on deepening access to formal finance. This registered some success in formal finance, albeit with persistence of informal finance over the same period. Informal groups are embracing emerging technologies such as M-Pesa to augment their traditional channels of intermediation to provide better financial services to users, hence sustaining high usage. Other efforts by the government, such as establishment of SASRA, and formalization of microfinance institutions through establishment of Microfinance Act 2006 to transform informal finance remains dominant over formal finance. On the one hand, this may suggest that these measures are inappropriate or regulations put in place are repressive, therefore enhancing use of informal finance. On the other hand, this may imply that there are certain factors that drive people to use informal finance that could not be addressed by financial and regulatory reforms aimed at enhancing use of formal finance.

The degree of utilization of credit from both formal and informal finance in Kenya is shown in Table 1.1. A few Kenyans (1.70%) use credit from informal finance, compared to 29 per cent from formal financial systems. Family and friends form the most important source of funds for individuals, with 51 per cent of the individuals relying on it. This, perhaps, is because of its convenience and low or at times, zero interest charges as compared to other financing arrangements. Eleven (11) per cent of the respondents indicated that they borrowed from banks, while 6 per cent borrowed from micro-finance institutions. Only 8 per cent of the respondents use SCAs to access loans.

Similarly, results in Table 1.2 show that 74 per cent of Kenyans reported that they used informal finance to save. Formal finance compares poorly to informal finance arrangements at 36 per cent. Thirty five (35) per cent reported to keep their money in a secret place, indicating that formal financial institutions have not succeeded in mobilizing most of the funds held by individuals. In addition, 24 per

Table 1.1: Loans from formal and informal finance

Type of financing		Percentage of individuals using it to loan funds
Formal	Bank	11
	MFI	6
Semi-formal	SACCO	12
Informal	SCA	8
	Shylock	3
	Family and friends	51
	Buyer of produce	4
	Employer	4
Other	Government	1

Source: Compiled from FinAccess, 2009 National Survey

cent were reported to use ROSCAs for saving purposes. Family and friends were used by 9 per cent of the respondents, while 6 per cent reported to have used SCAs for saving. As shown in Table 1.2, 16 per cent of individuals reported to have used banks, with only 2 per cent using micro-finance institutions (MFIs) for saving. Only 8 per cent of individuals reported to have used semi-formal arrangements such as SACCOs.

It is evident that informal finance plays a bigger role in credit and savings mobilization than formal finance in Kenya. Given the low penetration of formal financial services, these institutions have enormous potential to mobilize additional savings and to provide credit, especially to sections of the population that do not use banking services and the low-income groups (Sessional Paper No. 10 of 2012). Johnson and Nino-Zarazua (2011) established that approximately Ksh 1.2 billion is mobilized by informal groups monthly, translating to over Ksh 14.4 billion annually. Over half of these funds (Ksh 690 million) were mobilized through ROSCAs. It is against this backdrop that this study seeks to establish the determinants of informal finance use in Kenya.

Table 1.2: Savings in formal and informal finance

Type of financing		Percentage of individuals using it for saving
Formal	Bank	16
	MFI	2
Semi-formal	SACCO	8
Informal	SCA	6
	ROSCA	24
	Family and friends	9
	Secret place	35

Source: Compiled from FinAccess, 2009 National Survey

1.2 Research Problem

The goal of broadening use of formal finance is anchored in Kenya's Vision 2030, which envisages the country as a leading financial centre in Eastern and Southern Africa, with its financial institutions mobilizing savings to 30 per cent of GDP. Vision 2030 acknowledges that the major constraint to the growth of this sub-sector is the lack of an effective regulatory framework, giving rise to low public confidence in formal institutions. Despite the government's concerted efforts to enhance formal finance use in pursuance of this goal, the FinAccess National Survey 2009 revealed that majority of the adult population in Kenya use informal finance. In spite of financial liberalization, privatization, legal and regulatory reforms, informal finance use has remained persistently high, albeit with the attendant risks of lack of accountability, legal enforcement and impeding smooth transmission of monetary policy.

Further, despite informal finance use being vibrant and robust, the attention of policy makers and researchers has primarily been focused on formal finance. Consequently, informal finance has not been featured prominently in research and policy circles. It is not clear what factors determine an individual's choice of either formal or informal finance. Against this backdrop, the study seeks to establish the factors that drive informal finance use in Kenya, and which should be addressed by policy in order to reduce informality, and boost investment and growth by improving the viability and use of formal finance.

1.3 Research Questions

The key policy question arising from this study is what determines the choice of a mode of finance in Kenya. More specifically, the study seeks to answer the following questions:

- (i) How does individual socio-economic factors influence the choice of a mode of finance in Kenya?
- (ii) How does attitude towards formal finance affect the choice of a mode of finance in Kenya?
- (iii) How does internal business regulation influence the choice of a mode of finance in Kenya?

1.4 Objectives of the Study

The overall objective of the study is to establish the determinants of choice of a mode of finance in Kenya. Specifically, the study seeks to:

- (i) Establish the role of individual socio-economic factors in the choice of a mode of finance in Kenya.
- (ii) Examine the effect of attitude towards formal finance on the choice of a mode of finance in Kenya.
- (iii) Determine the effect of internal business regulation on the choice of a mode of finance in Kenya

1.5 Justification of the Study

Use of informal finance has predominantly remained high in Kenya. This, therefore, warrants mainstreaming of informal finance in research and policy making. The study, therefore, hopes to bring into focus the need for the Central Bank of Kenya (CBK), and other regulatory agencies in particular, and the government in general to adopt an effective regulatory framework, policies and reforms leading to effective transformation of informal to formal finance in order to enhance formal finance use. Informality has been found to be negatively correlated with economic growth. It would, therefore, be imperative to establish the drivers of informal finance in order to address them, hence limit the negative effects of informal finance use in the country. Further, the costs of informality appear even larger considering that it hinders the effectiveness of the country's monetary policy. It is hoped that this will enhance formal finance use, thus enhance the role of financial services in economic development, regional competitiveness of the country's financial system, and achievement of Kenya's Vision 2030.

2. Literature Review

2.1 Theoretical Literature

Financial intermediation plays an important role in economic development through effective mobilization of savings and allocation of funds to the real sector (McKinnon, 1973; Shaw, 1973; Aryeetey, Kyei and Asante, 1990; Burkett, 1988). Achievement of this objective depends on a well developed financial system. This involves increase in the scale, scope, complexity and efficiency of institutions and markets through which funds are transferred from savers to investors (Burkett, 1988). However, Kenya's financial system is dichotomized with both formal and informal financial systems. The existence of the two financial systems in a particular country has been explained by three schools of thought: McKinnon-Shaw (neoclassical school), the structuralist school and the imperfect information school.

The underlying argument of McKinnon (1973) and Shaw (1973) is that financial repression occasioned by government interference in financial markets was responsible for the under-developed nature of the financial system. This, they argue, leads to less than optimal contribution to economic growth by the financial system. Their argument was later reinforced by Galbis (1977), Kapur (1976), Mathieson (1980) and Fry (1997) who posit that economic growth can be enhanced by eliminating government interference in the workings of the financial market. It is this interference that leads to emergence of parallel markets, as economic agents sought to evade government controls and regulations (Jones and Roemer, 1989). It is the proponents of this school of thought that championed the liberalization of the financial system.

Departing from the McKinnon-Shaw school of thought, the structuralists (Taylor, 1983; Buffie, 1984; Kohsaka, 1984; van Wijnbergen, 1983; Aryeetey, Kyei and Asante, 1990 and Burkett, 1988) observe that structural weaknesses in the workings of financial markets are responsible for the dichotomous nature of financial systems in developing countries. The market failure in the credit market creates gaps in the formal financial system, prompting individuals to switch to alternatives, hence the existence of informal credit markets alongside formal credit institutions. In searching for alternatives to formal sector finance, some attention is increasingly being paid to informal and semi-formal finance (including micro-finance) for meeting demand for credit (Aryeetey, 1998). The proponents of this school of thought opine that informal finance plays an important role in developing countries as a result of structural weaknesses in formal finance.

Proponents of the imperfect information school of thought explain that imperfect information and costly contract enforcement result in market failures,

hence fragment the credit market. Stiglitz and Weiss (1981), Hoff and Stiglitz (1990), Bell (1990) and Basely (1994) observe that market failures undermine the working of financial markets. This, they argue, leads to moral hazard and adverse selection. In the same vein, Burkett (1988) opines that the relatively cheap production functions and knowledge of local information on the credit worthiness of borrowers used by informal financial institutions allow them to compete with formal financial institutions, thus helping to enforce decreased spreads between deposit and loan interest rates at formal financial institutions.

2.2 Empirical Literature

Burkett (1988) acknowledges that one of the reasons for widespread existence of informal finance is their accessibility, especially for non-wealthy savers/borrowers rationed out of the services of formal financial institutions. This is either due to constraints in formal finance or the inability of formal finance to satisfy excess demand for formal financial services.

Empirical studies (Azam *et al.*, 2001; Turvey and Kong, 2010; Yaldiz, Yener and Bazzana, 2011; Johnson and Nino-Zarazua, 2011) establish that trust is a significant determinant of individual choice to use informal finance. In their study, Johnson and Nino-Zarazua (2008) find that further analysis should be carried out to investigate the effect of attitude to formal finance on informal finance. In a survey conducted by Reputation Research (2012), individuals' attitude towards regulation in emerging markets regulation is often perceived as sufficient if not excessive, and support for regulation is intimately related to distrust of banks. The survey reveals that consumer attitudes towards the regulation of financial services are intimately related to their level of trust or distrust in them. As demonstrated by social networks in informal finance, trust in the financial industry is a function of familiarity, unless familiarity derives from negative associations. This implies that there is an inverse relationship between consumers' trust in formal financial institutions and their support for regulations.

The nexus of the analysis by McKinnon (1973) and Shaw (1973) is that economic growth may be impeded if financial intermediation is repressed by government regulations. For instance, repression of interest rates dampens the mobilization of savings. Concern with the microeconomic effects of financial regulations has supported the view that informal finance is, in part, a response by economic agents to certain regulatory constraints and inefficiencies, which result from these controls (Burkett, 1988). Therefore, use of informal finance may help policy makers identify inefficient regulations, which can be removed to enhance formal finance use.

The seminal work of McKinnon (1973) and Shaw (1973) triggered a concern with transaction costs in the provision of credit and savings services at the microeconomic (individual/household) level (Burkett, 1988). Transaction costs are incurred by intermediaries, savers and borrowers in formal financial institutions. According to Thillairajah (1994), these include administration costs, time spent in information gathering, formalizing collateral arrangements, the opportunity cost of time of travel and waiting time to deposit savings, document processing, approvals, disbursements and costs incurred related to the withdrawal of funds, inconvenient banking hours, and bureaucratic procedures often adopted by formal institutions. He further observes that for the financial intermediary itself, there are generally money costs involved in deposit mobilization, maintaining branches, operating mobile units, facilitate the mobilization and withdrawal of savings, customer account administration, control procedures, among others. Due to transaction costs, including information costs, informal finance is likely to have a comparative advantage over formal financial institutions in savings and credit transactions, even after removal of inefficient controls (Burkett, 1988). As compared to formal finance, the unique delivery mechanisms of informal finance enables them to lower their transaction costs, and offer services conveniently with a high level of flexibility and trust. This offers them a competitive advantage over formal finance, thus increasing its usage.

Widespread operations of informal groups in many developing countries arise to evade controls, regulations and repression of interest rate controls (Burkett, 1988; Aryeetey, 2003). Johnson (2004) finds that being young, educated and male raised the likelihood of borrowing from friends and relatives. Being young, educated and running small businesses meant that they needed funds, but had no collateral since they were too young to have inherited land, hence difficult to access formal finance. However, Oladeji and Ogunrinola (2001) find that as age increased, more earned income would go into informal savings. Similarly, FSD (2009) finds that individuals with more education and men are more likely to use formal financial services, while women are more likely to use informal services.

Past studies (Oladeji and Ogunrinola, 2001; Atieno 2001; Johnson and Nino-Zarazua, 2008) find that income is a very important influence on which financial services are used. They opine that as income increases, the tendency is for the fraction of income saved informally to decline, and given that average propensity to consume declines or remains the same, this implies an increased average propensity to save in the formal financial sector. Mwangi and Sichei (2011) establish that an increase in age, education and income tends to enhance access to formal credit, but the probability of access drops as one draws close to retirement age. The study finds that information costs impede access to finance, suggesting that the unmet demand arising from this scenario is likely to be met through informal groups.

Regulations play a pivotal role in the financial system as they influence among other factors such as costs, taxes, competition, access to formal finance, market discipline and the overall efficiency of the system. Empirical studies (Steel *et al.*, 1997; Tsai, 2004; Yaldiz, Yener and Bazzana, 2011; Bartini, Levine and Lotti, 2010) show that despite financial liberalization efforts and regulations, informal finance use still constitutes a large proportion of financing to poor households and small and micro enterprises (SMEs). Although financial and regulatory reforms since the year 2006 triggered significant investment in formal finance, the focus of researchers (Levine, 1997; Beck, Ross and Norman, 2000) has been on the effect of formal finance on economic development, with little regard on informal finance, effectively leaving out informal financial use both by reform and policy. Similarly, Allen, Qian and Zhang (2011) find that the China relied mostly on informal finance, given the structural weaknesses in its financial system.

To test the hypothesis about the role of gender in informal finance use, a dummy variable is used: male equals to one, if the respondent is male, zero otherwise. Empirical studies show that financial markets are segmented by gender, and women participate in informal finance, especially in savings more than men (Johnson, 2004; Tsai, 2001; Yaldiz, Yener and Bazzana, 2011; Johnson and Nino-Zarazua, 2011; Fapohunda, 2012). This finding has been attributed to lower levels of education, making it difficult to understand formal finance contracts and low income levels of women (Baydas, Bahloul and Adams, 1995; Johnson, 2004; Yaldiz, Yener and Bazzana, 2011).

There are negative impacts associated with informal finance. Perhaps, this may explain the concerted efforts to diminish informal finance. Honohan (2004) argues that in poor countries, much of the problem of predatory lending is likely to be found more in an underground or informal economy, than in any areas within the scope of formal financial sector policy.

Education has been established to influence socio-economic affairs of the society. Demirgüç-Kunt, Beck and Honohan (2008); Johnson and Nino-Zarazua (2008); Mwangi and Sichei (2011) find a positive association between education level and use of formal finance. Their findings suggest that the more educated do not use informal finance but formal finance. However, on the contrary to the notion that the informal segments usually attract poorly educated persons who cannot easily find places in the modern economy, they also appear to attract fairly literate and educated persons. Many educated people working in various institutions form groups where they pool funds either for investment or further lending to members at less stringent terms than formal institutions.

Pagura and Kirsten (2006), assessing formal-informal financial linkages in developing countries, establish that linkage arrangements between formal and

less formal financial institutions expanded financial outreach into rural areas. The coexistence of both formal and informal finance indicates that there is a clear demand for financial services across the population, though semi-formal and informal financial services and mechanisms are used more commonly than formal financial services (Ellis, Lemma and Rud, 2010; Gin'e, 2010).

2.3 Overview of Literature

Empirical studies on informal finance (Baydas, Bahloul and Adams, 1995; Yaldiz, Yener and Bazzana, 2011; Mwangi and Sichei, 2011) concentrated mainly on informal credit, ignoring the role of savings in informal financial systems. This study looks at the entire spectrum of financial intermediation in informal finance. In addition, past studies (Jonson, 2004; Chen, 2004; Johnson and Nino-Zarazua, 2008; Mwangi and Sichei, 2011) have predominantly focused on the level of income, age, awareness, education, product design and gender. This study, unlike the rest, introduces new variables. In particular, the study seeks to establish the effect of attitude towards formal finance, internal business regulations and transaction costs, on informal finance use. In their study, Johnson and Nino-Zarazua (2011) recommend that further research needs to be carried out to investigate the effect of attitude towards formal finance on informal finance use in Kenya. In addition, the study seeks to establish whether a thriving informal finance leads to a thriving formal finance.

This study is anchored on both the MacKinnon-Shaw and information schools of thought. These theories fit the study well as they link regulatory and cost constraints in formal finance to the use of informal finance. While past studies (Beck, Demirguc-Kunt and Levine, 2004; Honohan, 2004, Demirguc-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998; Beck, Levine and Loayza, 2000 and Levine, 2005) focused on the importance of access to formal access, empirical evidence linking attitude towards formal finance to informal finance use is limited, if any, in Kenya. Previous studies (Mwangi and Sichei, 2011; Atieno, 2001; Yaldiz, Yener and Bazzana, 2011) also predominantly focused on credit, with little or no attention to informal savings. It is, therefore, imperative to consider the implications of informal finance on policy in order to improve the viability of formal financing methodologies, hence enhance use of formal finance. This study potentially contributes to the scanty literature on the use of informal finance in Kenya.

3. Methodology

3.1 Conceptual Framework

Some individuals choose to use informal finance, while others use formal finance. These are the only two alternatives we use in a binary choice model. Assuming that an individual seeks to maximize the benefit derived from each financing alternative, his choice will be informed by the value he attaches to each alternative. It follows that there is an expected value attached to using a certain mode of finance (formal/informal). This value can be expressed as a sum of the probability of enjoying the benefits derived from informal finance use. According to McFadden’s random utility model (RUM), this scenario can be expressed in form of a utility function. Mwangi and Sichei (2011) argue that an individual is faced with a choice of various modes of finance, whose utility can be expressed as:

$$U_{ij}(x_{ij};z_{ij})=v_j(x_{ij};\beta)+\varepsilon_j, \quad i=1,2,\dots,N, \quad j=1,2,\dots,M \dots\dots\dots 1$$

Where;

$U_{ij}(x_{ij};z_{ij})$ represents the utility derived by individual i from credit choice of alternative j ,

x_{ij} represents the observed characteristics of individual i and alternative j chosen,

z_{ij} represents the unobserved characteristics of individual i and alternative j chosen,

$v_j(x_{ij};\beta)$ denotes the deterministic component of the utility,

ε_j is the random component of the utility, and

$j=1, 2$. There are two alternative j ; formal and informal finance

Formal: loans and savings with banks, microfinance institutions

Informal: loans and savings with shops/suppliers, buyers of harvest, SACCOs, money lenders, employers, ASCAs government institution, and hire purchase.

3.2 Model Specification

Given that an individual faces a binary choice between using informal finance and formal finance, his choice can be represented by an indicator variable y , so that:

1 individual uses informal finance

$$y = \begin{cases} 1 & \text{individual uses in formal finance} \\ 0 & \text{otherwise} \end{cases}$$

Since y the individual is rational, he chooses the alternative that maximizes his utility. Following Johnson and Nino-Zarazua (2008); Green and Hensher (2009); Mwangi and Sichei (2011); and Griffiths, Vul and Sanborn (2011), the dependent variable is dichotomous, and conventional regression methods are inappropriate. Also, the linear probability model is heteroskedastic and may predict probability values beyond the (0, 1) range. Therefore, the study uses the Maximum Likelihood technique to estimate a logistic regression model. To obtain the logistic model from the logistic function:

$$f(Y) = \frac{1}{1 + e^{-Y}} \dots\dots\dots 2$$

Let y represent the righthand side of a linear model (Kleinbaum and Klein, 2010) so that:

$$y = \alpha + \beta_1 X_1 + \dots + \beta_k X_k \dots\dots\dots 3:3$$

Substituting for y in the logistic function, we have:

$$f(Y) = \frac{1}{1 + e^{-Y}} = \frac{1}{1 + e^{-(\alpha + \sum \beta_i X_i)}} \dots\dots\dots 4$$

For the independent (predictor) variables X_i , and for dependent variable $= 1$ representing informal finance use, the probability of informal finance use $f(y)$ is:

$$\Pr(Y = 1 | X) = [1 + e^{-(\beta_i x_i + \varepsilon_i)}] \dots\dots\dots 5$$

Therefore, use of informal finance (that is the probability that $y=1$) can be expressed as:

$$\begin{aligned} \log it(P_i) &= \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_i x_i + \varepsilon_i \\ &= \alpha + \beta_1 Atfml + \beta_2 Dist + \beta_3 Age + \beta_4 Edn + \beta_5 Inc + \beta_6 IBR + \beta_7 Gndr + \beta_8 Re + \varepsilon. \dots\dots\dots 6 \end{aligned}$$

This can be linearized by presenting the log odds form as:

$$P_i = \frac{1}{1 + e^{-(\beta_i x_i + \varepsilon_i)}} \dots\dots\dots 7$$

Where:

Atfml = Attitude towards formal institutions

Dist = Distance to formal financial institution

Age = Age of an individual

Edn = Individual's education level

Inc = Individual's income

IBR = Internal business regulations in formal institutions

Gndr = Individual's gender

Re = Region

ε = error term

3.3 Data and Data Sources

The study uses data from FinAccess National Survey 2009 undertaken by Financial Sector Deepening (FSD) Kenya, in collaboration with the the Central Bank of Kenya (CBK) and the Kenya National Bureau of Statistics (KNBS) in 2009 in Kenya. The survey picked a nationally representative sample of 6,598 in 2009, with 78.7 per cent of the respondents coming from a rural setting and 21.3 per cent from an urban setting. The survey questionnaire sought data on a myriad of issues, including household characteristics, age, gender, and formal, semi-formal and informal financial services.

The advantage of this data set is that it provides a large and representative sample covering all regions of the entire country. In addition, respondents were drawn from both rural and urban settings, hence captured the varied characteristics of individuals across the divide. The limitation of this data set is that it was collected with the purpose of evaluating the level of financial access in Kenya. For this reason, the data may not have captured the use of informal finance in Kenya. This may be reflected by the proxies used, for instance the main economic activity that earns income. In addition, in some cases, an index had to be computed to measure certain variables.

3.4 Measurement of Variables

The use of financing mechanism, formal or informal, is represented as a dummy variable coded either 1 (if the individual uses informal finance) or 0 (otherwise). As the dependent variable is dichotomous, conventional regression methods are inappropriate, as linear probability model is heteroskedastic and may predict probability values beyond the (0, 1) range, thus the choice of logistic regression model to estimate the model. Data to measure informal finance use is taken from the FinAccess survey questionnaire. If the answer is “yes”, it is coded 1 and 0 otherwise. However, there were challenges in estimation and measurement, particularly considering that there are individuals who used both formal and informal finance. This was occasioned by the fact that the survey was conducted for a different purpose other than informal finance use. Table 3.1 presents the predictor variables (attitude to formal finance and internal business regulations controlling for region, level of education, income, gender and age), and the hypothesized signs of their parameters.

Table 3.1: Variable measurement

Variable	Definition	Source	Description	Expected sign
Informal finance use	Dummy = 1 if individual has used informal groups for credit or savings, zero otherwise	FinAccess	Common among poor, uneducated, rural women Johnson & Nino-Zarazua (2008), Mwangi and Sichei (2011); Atieno (2001)	
Attitude towards formal finance	Index of questions D8(1) and G22(20)	FinAccess	Negative attitude to formal drive individuals to informal finance use Azam <i>et al.</i> (2001), Turvey and Kong (2010), Yaldiz, Yener and Bazzana (2011), Johnson & Nino-Zarazua (2011)	+
Region	rural =1; urban = 2	FinAccess	High usage of informal finance in rural areas Johnson & Nino-Zarazua, (2008), Mwangi & Sichei (2011); FSD (2009)	
Internal regulation	Mainly KYC requirements drawn from section G of the questionnaire. An index of G22(14); G22(15)	FinAccess	Restrictive requirements to use formal finance increases informal finance use Steel <i>et al.</i> (1997), Tsai (2004), Yaldiz, Yener and Bazzana (2011), Bartini, Levine and Loth (2010)	
Education	Individual's level of education measured categorically, with 0 = no education; 1 = primary; 3 = secondary and 4 = tertiary	FinAccess	Educated individuals are more likely to use formal finance Johnson & Nino-Zarazua (2008), Mwangi and Sichei (2011), Aryeetey (2003), Oladefi and Ogunrinola (2001)	-
Gender	Dummy = 1 if male, 2 otherwise (section A of the questionnaire)	FinAccess	Women participate in informal finance more than men Johnson (2004), Tsai (2004), Yaldiz, Yener and Bazzana (2011), Johnson and Nino-Zarazua (2011), Fapohunda (2012), Baydas, Bahloui and Adams (1995), Johnson (2004), Yaldiz, Yener and Bazzana (2011), FSD (2009)	
Age	Number of years of an individual measured categorically with 1 = youthful; 2 = mature and 3 = elderly; 16-34 years = youth; 35-64 years = mature and 65+years = elderly	FinAccess	Formal finance use higher at intermediate age Oladefi and Ogunrinola (2001), Mwangi and Sichei (2011)	-
Income	Individual's income (section Q of the questionnaire)	FinAccess	Used mainly by low income earners Atieno (2001), Johnson and Nino-Zarazua (2008), Mwangi and Sichei (2011)	-
Distance	Distance to a formal institution. 1 = less than 5 kilometers; 0 = more than 5 kilometers	FinAccess	It is expected that as distance to a formal institution increases, informal finance use increases. Johnson (2004), Aryeetey (2003 and 2012), FSD (2009), Johnson and Nino-Zarazua (2008), Mwangi and Sichei (2011)	+

Source: Own compilation, 2013

4. Results and Discussion

4.1 Summary Statistics

The summary statistics in Table 4.1 reveal that 73.5 per cent of the respondents use informal institutions to save. The average income of the respondents is Ksh 14,250.

Similarly, as shown in Table 4.2, over 70 per cent of the respondents use informal systems to access credit facilities. In addition, most of the respondents were drawn from rural settings as indicated by a mean of 1.2.

4.2 Marginal Effects after Logit

The likelihood ratio chi-square test of the logit regression on informal savings use 87.03 with a p value of 0.0000 implies that the model as a whole fits significantly with the hypothesized factors as joint predictors of informal savings use. Similarly, the likelihood ratio chi-square test of the logit regression on informal credit use is 75.09 with a p-value 0.0000, indicating that the hypothesized factors fit significantly and the hypothesized factors jointly predict informal credit use (Appendix I and II, respectively). Results in Table 4.3 and Table 4.4 show the marginal effects after logit regression results of the socio-economic factors that influence informal savings and credit use, respectively.

Table 4.1: Summary statistics informal savings use

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
Informal savings use	6598	.7352228	.4412479	0	1
Region	6598	1.286754	.4522797	1	2
Gender	3385	1.814771	.3885406	1	2
Income	6590	14249.54	30669.02	20	812500
Education	3385	1.317873	.7813519	0	3
Attitude	4991	.1226207	.3280342	0	1
Internal regulations	5485	.0100273	.0996424	0	1
Distance	6349	.2231848	.416414	0	1
Age	3385	1.351551	.5224438	1	3

Attitude to formal finance

As hypothesized, a negative attitude towards formal financial institutions positively influences informal finance use. Table 4.2 shows that a negative attitude significantly influences use of informal savings by individuals at 5 per cent confidence level, p-value=0.000. However, negative attitude to formal institutions influences informal credit use at 10 per cent significance level, p-value=0.079. This may be attributed to the feeling that banks are a preserve of the rich and, therefore, do not offer products or services that are affordable by the poor majority. Consequently, individuals turn to informal finance to satisfy their unmet demand for financial services.

It should be noted that informal finance thrives due to strong bonds and close relationship amongst its users, which in turn boosts confidence in informal finance. Consequently, this enhances individuals’ confidence in these institutions compared to formal institutions. In addition, negative attitude arises out of high transaction costs in formal institutions, which may not have been disclosed at the time of establishing a savings or loan contract. This is compounded with high interest charges, making informal systems more appealing to individuals than formal institutions. These fees make use of formal finance prohibitively expensive for the low income earners. This is especially true considering that informal finance systems rarely charge a service fee. Negative attitude may also be attributable to low familiarity with formal financial services resulting from high levels of exclusion from formal finance.

Table 4.2: Summary statistics informal credit use

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
Informal Credit use	6598	.70495	.4720087	0	1
Region	6598	1.286754	.4522797	1	2
Gender	3385	1.814771	.3885406	1	2
Income	6590	14249.54	30669.02	20	812500
Education	3385	1.317873	.7813519	0	3
Attitude	4991	.1226207	.3280342	0	1
Internal regulation	5485	.0100273	.0996424	0	1
Distance	6349	.2231848	.416414	0	1
Age	3385	1.351551	.5224438	1	3

Internal regulations

Internal business regulations and other requirements to open and operate a bank account are a hindrance to formal credit use. These requirements have the effect of locking out those who do not meet these requirements. As shown in Table 4.3, internal regulations in formal institutions positively and significantly influence informal finance use, p-value=0.000. Rigid and cumbersome know your customer (KYC) requirements result in too much documentation, inflexibility, collateral requirements and guarantors requirements, and negatively impact individual borrowing from formal institutions. Consequently, many individuals may be locked out as they do not meet the set qualifications.

However, internal regulations negatively influence informal savings use. This may be due to the fact that individuals find their savings being more secure in formal institutions than in informal institutions. However, this result is not statistically significant at either 5 per cent or 10 per cent significance level.

Gender

As shown in Table 4.2 and Table 4.3, gender is a significant factor in determining use of informal finance. Gender is particularly significant at 5 per cent significance level, p-value=0.00 in informal savings, whereas informal credit is significant at 10 per cent significance level, p-value=0.061. This may be attributed to the popularity of merry go rounds or ROSCAs among women, who pool resources for onward lending to members. In other instances, they give each member a lump sum in turn. This finding is not surprising given that women comprised 80 per cent of the respondents.

Table 4.3: Marginal effects after logit regression on informal savings use

y = Pr(informal savings use) (predict)							
= .75545357							
Variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]
Region	-.0655246	.02123	-3.09	0.002*	-.107137	-.023912	1.24562
Gender	.0809268	.02096	3.86	0.000*	.039845	.122009	1.80579
Income	1.05e-06	.00000	1.35	0.178	-4.8e-07	2.6e-06	9050.72
Primary Education*	.0994516	.02559	3.89	0.000*	.0493	.149603	.549124
Secondary Education*	.0718786	.02594	2.77	0.006*	.021044	.122713	.27837
Tertiary Education*	.0314075	.04908	0.64	0.522	-.064796	.127611	.029703
Attitude*	.1214932	.02396	5.07	0.000*	.074523	.168464	.096344
Distance*	-.0572832	.02223	-2.58	0.010*	-.100849	-.013718	.249048
Mature*	.0471877	.01987	2.38	0.018*	.008248	.086128	.285986
Elderly*	-.0150188	.05757	-0.26	0.794	-.127845	.097807	.023229
Internal Regulation*	-.0343765	.02656	-1.29	0.196	-.086433	.01768	.123001

* Significant at 5% confidence level

Table 4.4: Marginal effects after logit regression on informal credit use

y = Pr(informal credit use) (predict)							
= .3138597							
variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		x
Region	-.0272501	.02337	-1.17	0.244	-.07305	.018549	1.24562
Gender	.0471328	.02513	1.88	0.061**	-.002125	.09639	1.80579
Income	1.09e-06	.00000	1.44	0.149	-3.9e-07	2.6e-06	9050.72
Primary Education*	.0850297	.02902	2.93	0.003*	.028157	.141902	.549124
Secondary Education*	.0382322	.0346	1.10	0.269	-.029588	.106052	.27837
Tertiary Education*	.0443858	.06582	0.67	0.500	-.084624	.173395	.029703
Attitude*	.0008279	.03093	0.03	0.079	-.059794	.06145	.096344
Distance*	-.0920579	.02123	-4.34	0.000*	-.133673	-.050443	.249048
Mature*	.0746611	.02228	3.35	0.001*	.030984	.118338	.285986
Elderly*	-.0067088	.06391	-0.10	0.916	-.131977	.11856	.023229
Internal Regulation*	.1160307	.02502	4.64	0.000*	-.165063	.066998	.123001

* Significant at 5% confidence level ** Significant at 10% confidence level.

Women in rural areas rely on informal finance mainly because they do not have tangible collaterals to finance domestic expenditure due to cultural restrictions on property ownership. This is mainly met by informal lenders against firm produce, local traders, money lenders or even against their savings in informal systems. Women are also known to be good in group dynamics in Kenya than men. The growth and development of informal groups such as SCAs (*chamas*) and ROSCAs is a result of such strong bonds among women. This indicates that women continue to play a leading role in Kenya’s financial intermediation and economic development.

Income

Income is an important determinant of an individual’s use of informal finance use. Results in Table 4.2 and Table 4.3, p-values=0.000, show that income significantly influences an individual’s choice of informal finance. However, this finding is not in line with the hypothesis made that as an individual’s income increases, they tend to use more of formal finance. This result contradicts the notion that informal finance is a preserve of the low income individuals. This result is inconsistent with the finding of previous studies (FSD, 2009; Aryeetey, 2003; Johnson and Nino-Zarazua, 2008), indicating that the low income individuals locked out of formal finance turn to other alternatives such as informal finance.

Level of education

An individual’s level of education significantly influences their choice of informal finance. Even though it was hypothesized that as an individual’s level of education increases one tends to embrace formal finance, findings in Table 4.2 and Table

4.3 indicate a positive relationship. Individuals with primary education or no education at all use informal systems, both for savings (p-value=0.000) and credit purposes (p-value=0.003). This explains why informal finance thrives more in the rural areas, particularly where majority of the people are least educated. However, only individuals with up to secondary education find informal savings appealing, p-value=0.006, whereas those above secondary level do not use informal loans.

Age

Results show that an individual's age significantly influences their choice of informal finance. Given that majority of the respondents were below the age of 35 years, it implies that majority of informal finance users are youthful. This finding could be attributed to the fact that most youth do not have security required by formal financial institutions for purposes of credit services. Consequently, they turn to informal finance to meet their financial needs, as they do not require security. The high level of unemployment particularly in the rural areas and property ownership for collateral purposes may also explain this scenario, where there is a positive relationship between informal finance use among the youth, whereas this relationship is negative among the elders.

Distance to formal financial institutions

As hypothesized, as distance to formal financial institutions increases, individuals are more likely to use informal finance. This is attributable to the costs associated to travelling, and the time taken to access formal institutions. Results in Table 4.2 and Table 4.3 show that distance is statistically significant in influencing both informal savings and credit use.

Region

It was expected that informal finance use is high in rural areas compared to urban areas. Results in Table 4.3 show that use of informal saving systems is significant, p-value=0.002, in rural areas. This may be attributable to the few formal institutions in rural areas, low awareness and incomes in rural areas. However, informal credit was not statistically significant at either 5 per cent or 10 per cent level.

5. Conclusion and Policy Recommendations

5.1 Conclusion

Kenya's financial system continues to play a pivotal role in the country's economic growth through its intermediary roles. The system is dichotomized into formal and informal, with the later dominating the former in usage by individuals. The study explains the socio-economic factors that determine informal finance use in Kenya. The analysis was anchored on both the MacKinnon-Shaw (1973) and information schools of thought.

Evidence from the study reveals that informal finance is the predominant source of financing, and the most used for saving by individuals. It mobilizes funds in excess of Ksh 14.4 billion annually as savings, which are later channeled to formal financial systems, underscoring its savings mobilization. This seems to suggest that both formal and informal systems may be complimentary rather than substitutes, and their co-existence may have positive effects. Findings indicate that factors that have played a key role in promoting the use of informal finance include: attitude to formal finance, income, internal business regulations, age, distance to formal institutions, and individual's level of education.

5.2 Policy Recommendations

Formal institutions should address the negative attitude that drives individuals into using informal finance, with the attendant negative effects of informality such as poor transmission of the country's monetary policy. It is, therefore, incumbent upon formal institutions and other regulatory agencies such as the Central Bank of Kenya to adopt an effective regulatory framework, policies and reforms leading to effective transformation of informal to formal finance. Formal institutions, in particular, should enhance relationships with their customers to build strong bonds such as those of informal systems. In addition, formal institutions can enhance their flexibility by addressing customer needs on a case by case basis, rather than having standardized contracts that may not suit all individuals. The Central Bank should issue guidelines to rein on the escalating fees and other costs that enhance a negative attitude that formal institutions are a preserve of the rich.

Even though due diligence requirements are critical in banking, it is necessary for CBK in conjunction with KBA and banking institutions to re-evaluate KYC requirements with a view to weeding out excessive internal regulations that drive away individuals into using informal finance as they seek to circumvent or avoid such constraints. Such interventions will enhance efficiency of formal financial

systems, efficient allocation of funds and mobbing up funds from informal to formal system.

Generally, it would be important for reforms in formal financial institutions to integrate informal finance rather than seek to eliminate them. Therefore, regulations should be structured in such a manner that they favourably filter into informal systems, thus paving way for appropriate linkages and integration of the two systems. This will have the effect of not only enhancing use of formal finance, but also the smooth and gradual movement from informal to formal finance.

Future studies should also try to establish the linkages between formal and informal finance in Kenya. This will be important in empirically determining whether they are complementary or substitutes, hence enhancing policy formulation.

Lastly, future surveys should seek to improve data collection in the two financing systems so as to support evidence-based policy formulation.

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Appendix

Appendix I: Logistic regression of informal savings use

Logistic regression		Number of obs =		2626		
		LR chi2(11) =		87.03		
		Prob > chi2 =		0.0000		
Log likelihood = -1442.4409		Pseudo R2 =		0.0293		
Informal savings use	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Region	-.3546787	.1151882	-3.08	0.002	-.5804434	-.1289141
Gender	.4380497	.1136814	3.85	0.000	.2152383	.6608612
Income	5.70e-06	4.24e-06	1.35	0.178	-2.60e-06	.000014
Primary Education	.5320318	.1359265	3.91	0.000	.2656208	.7984429
Secondary Education	.4082522	.1551615	2.63	0.009	.1041412	.7123632
Tertiary Education	.1776604	.2908337	0.61	0.541	-.3923633	.747684
Attitude	.7856306	.1928622	4.07	0.000	.4076276	1.163634
Distance	-.2988932	.112252	-2.66	0.008	-.5189032	-.0788833
Mature	.2630877	.1144403	2.30	0.022	.0387889	.4873865
Elderly	-.0797556	.3000513	-0.27	0.790	-.6678453	.5083341
Internal Regulation	-.1799289	.1346918	-1.34	0.182	-.4439201	.0840622
Constant	.2634711	.284799	0.93	0.355	-.2947248	.821667

Appendix II: Logistic regression of informal credit use

Logistic regression		Number of obs =		2626		
		LR chi2(11) =		75.09		
		Prob > chi2 =		0.0000		
Log likelihood = -1607.6196		Pseudo R2 =		0.0228		
Informal Credit Use	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Region	-.1265378	.1085192	-1.17	0.244	-.3392316	.086156
Gender	.2188643	.1167771	1.87	0.061	-.0100147	.4477432
Income	5.05e-06	3.49e-06	1.44	0.149	-1.80e-06	.0000119
Primary Education	.3985066	.1376884	2.89	0.004	.1286423	.6683709
Secondary Education	.1751136	.1564927	1.12	0.263	-.1316065	.4818336
Tertiary Education	.1995256	.2873223	0.69	0.487	-.3636157	.762667
Attitude	.0038422	.1434611	0.03	0.979	-.2773364	.2850208
Distance	-.4478207	.1090627	-4.11	0.000	-.6615798	-.2340617
Mature	.3383821	.0989778	3.42	0.001	.1443892	.532375
Elderly	-.0313284	.3001651	-0.10	0.917	-.6196412	.5569844
Internal Regulation	-.5932857	.1438424	-4.12	0.000	-.8752116	-.3113598
Constant	1.250832	.2878663	4.35	0.000	-1.81504	.6866247

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