Journal of
Poverty, Investment and Development
(JPID)

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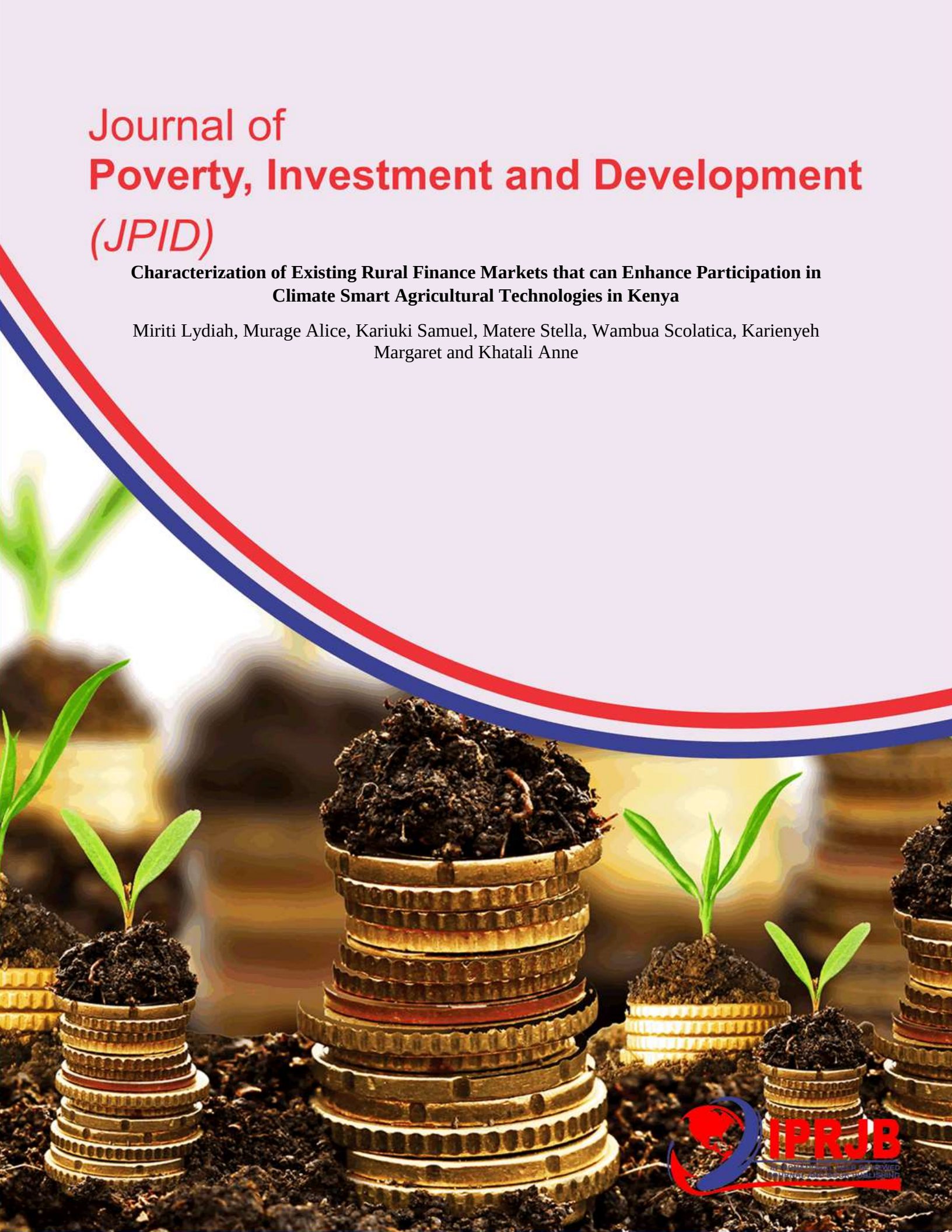

Journal of Poverty, Investment and Development

ISSN 2520-5196 (online)

Vol.8, Issue 2, No.1. pp.1 - 21, 2023

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Characterization of Existing Rural Finance Markets that can Enhance Participation in Climate Smart Agricultural Technologies in Kenya

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Article History

Received 1st February 2023
Received in Revised Form 15th February 2023

Accepted 3th March 2023

Abstract

Purpose: In Kenya, small holder farmers face climate change related challenges. It is therefore imperative to enhance adaptive capacity through climate smart agricultural (CSA) technologies. Access to finance is a significant enabler for adoption of CSA technologies yet small holder farmers, especially women, have an acute financing gap for agriculture. The purpose of the study was to characterize existing rural finance markets that can enhance adoption of Climate smart agricultural technologies among small holder farmers in Kenya and also improve the participation of other agricultural value chain actors in climate smart agricultural technologies. This was to enhance a better understanding of existing rural financial services available to agricultural value chain actors and the potential of the financial institutions to increase credit access to the value chain actors.

Methodology: The study used cross sectional data gathered through questionnaires administered on farmers, rural financial institutions and other actors in eight, Kenya Climate Agricultural Project (KCSAP) counties in Kenya. Data was analyzed using Stata statistical package and presented using tables and figures.

Findings: Rotating and savings credit associations (ROSCAs) were the main credit source for most households. Findings revealed that farmers rarely access insurance for their farming activities. Unlike farmers, other actors for instance, agro processors and agro dealers get loans through mobile phones where short term loans were borrowed from different providers. Majority of financial institutions were serving agricultural sector.

Unique Contribution to Theory, Practice and Policy: The study had presumed that access to rural financial market services by value chain actors in climate smart technologies for crops and livestock will be enhanced and this will increase adoption in the target Counties. The theory or assumption was validated in a workshop by all stakeholders which was followed up by linking up the value chain actors and the financial institutions through capacity building forums. Financial institutions could leverage on existing models used by ROSCAs to increase access to rural financial services especially by women and youth. A gender-transformative approach should be considered to increase women access to rural financial services.

Keywords: *Characterization, Climate smart, Rural financial markets, Technology, Kenya*

INTRODUCTION

Climate-related risks, including extreme events such as drought, excessive rainfall and consequent flooding have been widely acknowledged to negatively affect rural livelihoods particularly in agricultural communities in developing countries (IPCC, 2018). Smallholder farmers, especially women, are the vast majority and most vulnerable to adverse effects of climate change. This is because of low adaptive capacity and high exposure to livelihood and food-security risks (FAO, 2015a). The vulnerability of agriculture to climate change threatens resilience of production and hence food security (FAO, 2015a).

In Kenya, climate smart agricultural technologies, innovations and management practices (CSA-TIMPs) have been promoted to enhance the adaptive capacity especially for smallholder farmers. However, the transformational changes necessary to enhance farmers' productivity and adaptive capacity to adapt to climate change, while reducing the emissions of greenhouse gases from their production process, require capital and customized financial products (FAO, 2015b). A number of studies reflect the consensus that access to credit influences adoption of agricultural technologies (Kiplimo et al., 2015; Kirui et al., 2013; Matere et al., 2022; Namboka et al., 2017; Njeru et al., 2016). Farmers' access to and utilization of rural finance services is acknowledged to increase farm productivity, food supply and households' income. This enables the resource-poor small scale farmers to accumulate wealth in order to invest in improved farming technologies that alleviate poverty (Carrer et al., 2020; Das, 2018; Kiros and Meshesha, 2022; Njeru et al., 2016;Silong and Gadanakis, 2020).

Farmers who access credit, saving and insurance services are empowered to procure appropriate inputs, equipment and hire labour to venture into more profitable enterprises (Das, 2018). Nonetheless, smallholder farmers, particularly women, have limited access to credit even though savings and credit services that can give leverage to adopt more efficient technologies exist (Hussain and Thapa, 2012). The limited access to rural finance services is attributed to information asymmetry that is typical of smallholder farmers especially women. This leads to unawareness of loan and saving services and other options available, credit acquisition procedures and operational dynamics of lending and institutions (Taremwa et al., 2021). There is consensus that access to credit contributes to rural development (Akmal et al., 2012; Das, 2018; Kirui et al., 2013; Njeru et al., 2016; World Bank, 2017).

The rural finance market in Kenya is full of imperfections, and the formal banking sector does not satisfy the growing demand for credit, with many borrowers turning to informal loan sources (relatives, private moneylenders, etc.) to meet their production and consumption needs (KIPRA, 2019). One of the major sources of imperfections in rural credit markets is lack of information that facilitates borrowing/lending transactions.

To effectively remove market imperfections in the rural finance markets, it requires an understanding of the characteristics of various rural finance products and how the financial institutions operate. There has been a renewed interest in improving access to agricultural credit in order to identify sound finance markets which can serve farmers who are often ignored by formal sources (Kiplimo et al., 2015; Namboka et al., 2017). Agricultural value chain actors' improved access to rural finance services for climate smart agriculture (CSA) can act as a catalyst to; unlock financial resource constraints, tighten the links between financial institutions and smallholder farmers especially women and youth, and provide technical assistance to build the capacities of everyone involved in the financial ecosystem.

The purpose of this study was to characterize the existing rural finance markets that can enhance participation in climate smart agricultural technologies in Kenya

1. To characterize existing rural finance markets that can enhance adoption of Climate smart agricultural technologies among small holder farmers in Kenya
2. To characterize existing rural finance markets that can improve the participation of other actors (Agro- transporters, agro-processors, agro-dealers, agro-aggregators) in climate smart agricultural technologies
3. To characterize existing rural finance products and services that can enhance participation in climate smart technologies among value chain players

The findings of this study informs on the sustainable strategies in formulation of interventions for enhancing rural financial markets access for actors along agricultural value chains. This will lead to increased sustainable productivity and build resilience of crop and livestock value chain actors through accessible financial services and increased capacity to invest in CSA-TIMPs for crops and livestock.

Figure 1 shows the approach the study adopted in order to fill the gaps that are existing in access to financial services and products hence, enhance adoption of climate smart technologies.

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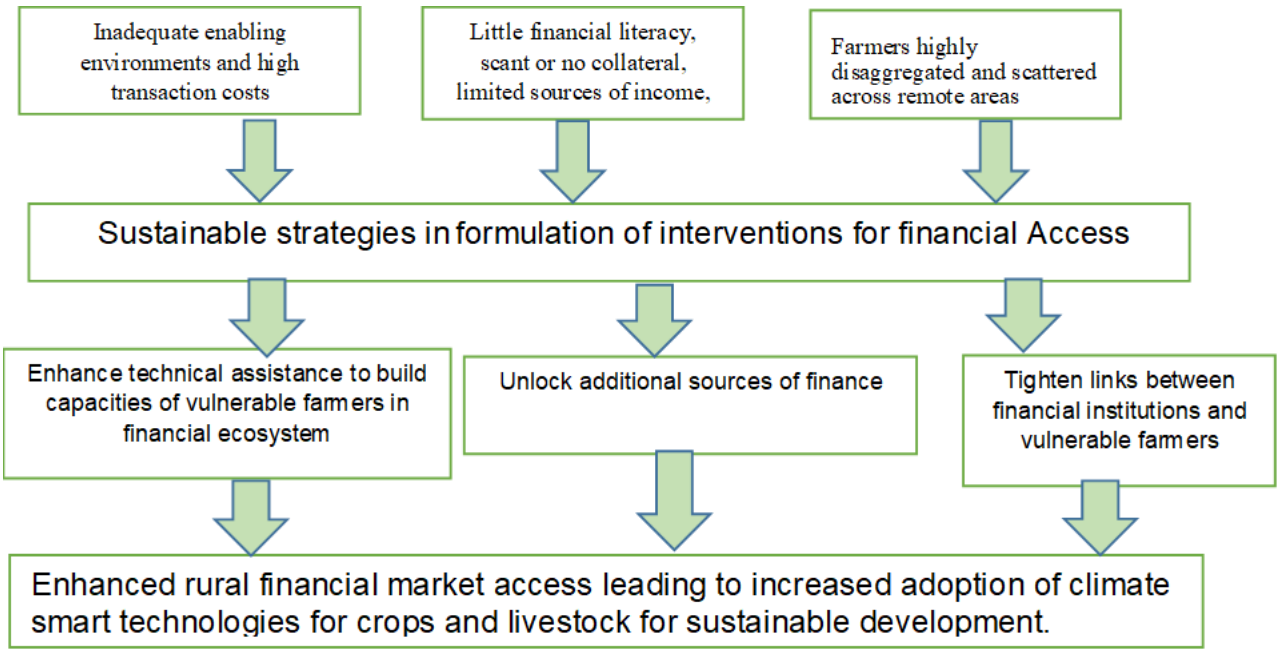

Figure 1: Barriers in Access to Financial Services by Farmers and the Interventions Needed

Materials and Methods

Study Site

The study was conducted in 8 out of the 24 designated KCSAP counties in Kenya namely: Kericho, West Pokot, Nyandarua, Nyeri, Isiolo, Taita Taveta, Busia and Kisumu (Figure 2). These counties were pre-selected based on KCSAP project prioritized value chains that would contribute to increased access to rural financial services hence increased agricultural productivity. The counties selected by the project were representative of the different agro-ecological zones (AEZs) namely; High, medium, semi-arid and arid zones. In each zone, the study purposively selected the counties as represented below:

Table 1: Selected Counties and the Agro-ecological Zones

Agro-ecological Zones	Counties Selected
High	Nyandarua and Kericho
Medium	Kisumu and Busia
Semi-arid	Nyeri, West Pokot and Taita Taveta
Arid	Isiolo

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The study site is as shown in the map below.

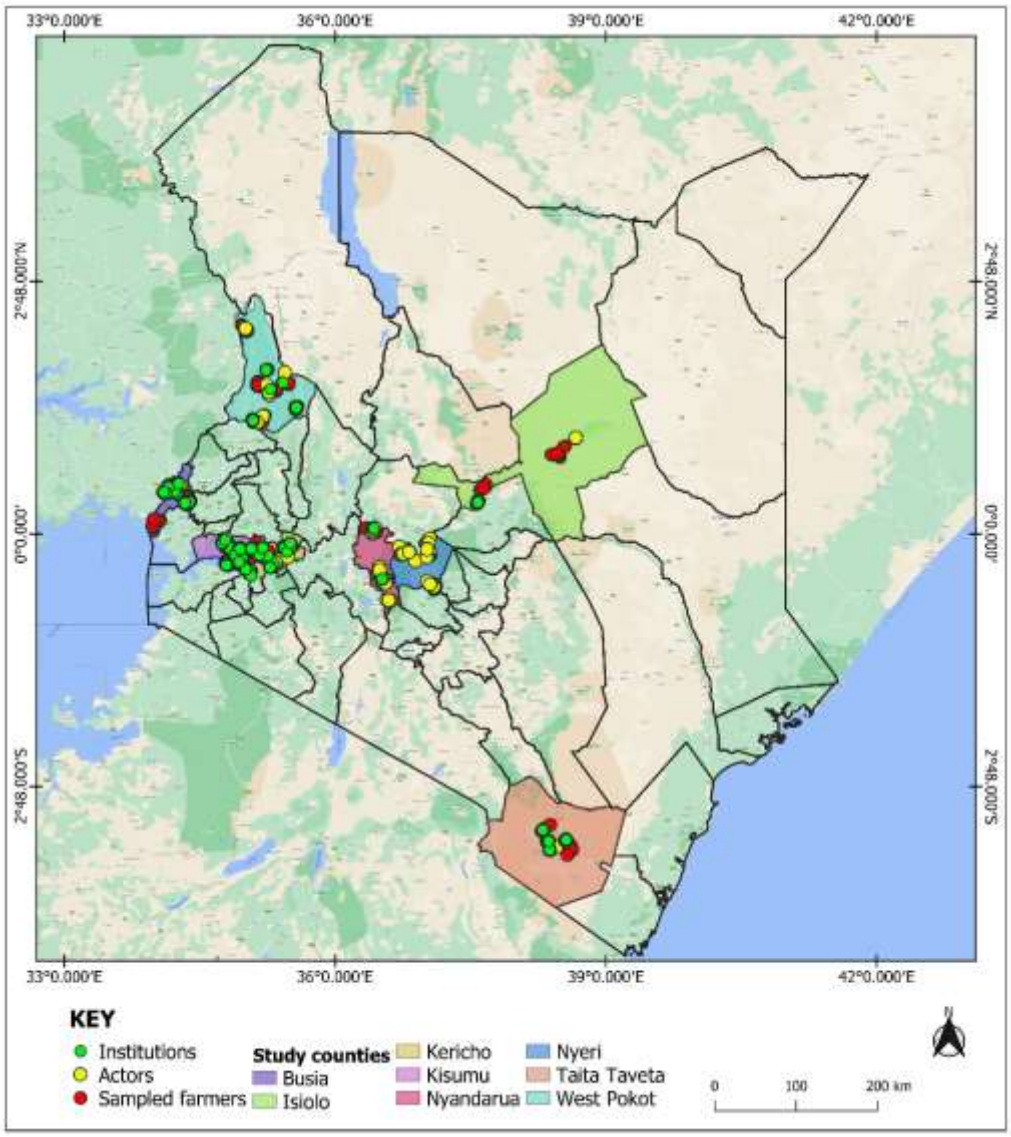

Figure 2: Map of the study sites

Sampling Design and Determination of Sample Size

The study adopted a hybrid of multi-stage, purposive and random sampling techniques. In each county, KCSAP sub-counties and wards were first identified. A scoping study was conducted to map out crop and livestock rural financial markets in the target KCSAP wards and identify the value chain actors for both formal and informal financial markets. After the scoping study, an inception workshop was conducted with key stakeholders in order to heighten their understanding of the project's proposed activities and expected results. This was aimed at enhancing their

commitment to support the implementation of the proposed project activities and teamwork. The scoping study and inception workshops were intended to provide a sampling frame for the study. Based on the generated sampling frames, random samples were drawn for each category of actors for the survey. Purposive sampling was used to select key informants in the sector for the key informant interviews (KIIs) and participants for focus group discussions (FGDs). Simple random sampling was employed in selecting respondents for the household (farmers) survey.

Primary data was collected through household survey, FGDs and KIIs. Secondary data was derived from desk review to establish history of organizations, their operations, outreach, costs, performance indicators, financial services provided and socio-economic characteristics of clients, collateral requirements, and uses of loans, transactions charges, default rates, sustainability, constraints and opportunities.

Data Collection Tools and Procedures

Through household and market surveys, focus group discussions (FGDs) and key informant interviews (KIIs), the project gathered both qualitative and quantitative data. Structured questionnaires were used for household survey which were generated and uploaded on Open Data Kit (ODK), and then downloaded in smartphones for data collection exercise in the field. FGDs guides and KIIs check lists were used to collect data from selected value chains players and financial institutions. The instruments were pre-tested in the field with a small number of respondents outside KCSAP wards to ensure that all thematic areas and questions were clearly understood in order for respondents to provide quality information.
FGDs were conducted in each county to have in depth understanding of issues surrounding access to different financial services. The FGDs comprised separate groups of 10 male and female farmers drawn from across the KCSAP wards. KIIs comprised of state and non-state actors, farmer group leaders, other actors (agro-processors, agro-transporters, agro-aggregators among others).

Data Analysis

Descriptive statistics involving means, frequencies and standard deviations were generated using scientific software Stata, which was used to describe access, constraints and effectiveness of rural finance markets. Qualitative information from FGDs and KIIs were analyzed by establishing emerging common patterns and trends on the basis of discourse analysis.

RESULTS AND DISCUSSIONS

Household Demographic Characteristics

In the selected eight Counties, the mean age of household members was between 19 and 38 years old. Nyeri and Nyandarua Counties had the highest mean (38 and 37 years respectively) while West Pokot had the lowest (19 years). The average household size was 5 members which is higher than the national average of 4 according to the KNBS, 2019. West Pokot and Kericho counties had relatively larger household sizes (6 persons), while Nyandarua (4 persons) and Nyeri (3persons) had the lowest. In Nyeri and Nyandarua Counties, it follows that families have fewer but older members while in West pokot and Kericho Counties, families have more and younger members.

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There is need to develop financial interventions that target older members in Nyeri and Nyandarua Counties for instance, access to insurance services. In West Pokot and Kericho, financial interventions targeting younger members is critical for instance, group formations for purposes of pooling resources together.

Level of Education by Household Members

Education is crucial in access to formal credit and adoption of technologies. In the eight selected Counties, at least 30% and above of household members had attained both primary and secondary education. West Pokot had only 28% of household members with secondary education by the time of the study (Figure 3). The low percentage of secondary education in west pokot contrast with the high number of household members and their age group as explained earlier. This can be attributed to the high rate of school dropout after primary school due to early marriages and herding, as was cited during FGDs. Household members with no formal education were high in Isiolo (76%) and West Pokot (63%) counties which also registered low attainment rates at primary, secondary and tertiary levels (Figure 3). The results agree 2019 population and household census that West Pokot and Isiolo had the highest number of persons who had never been to school. Sensitization on both Counties is needed in order to enhance access to education and financial interventions that target household.

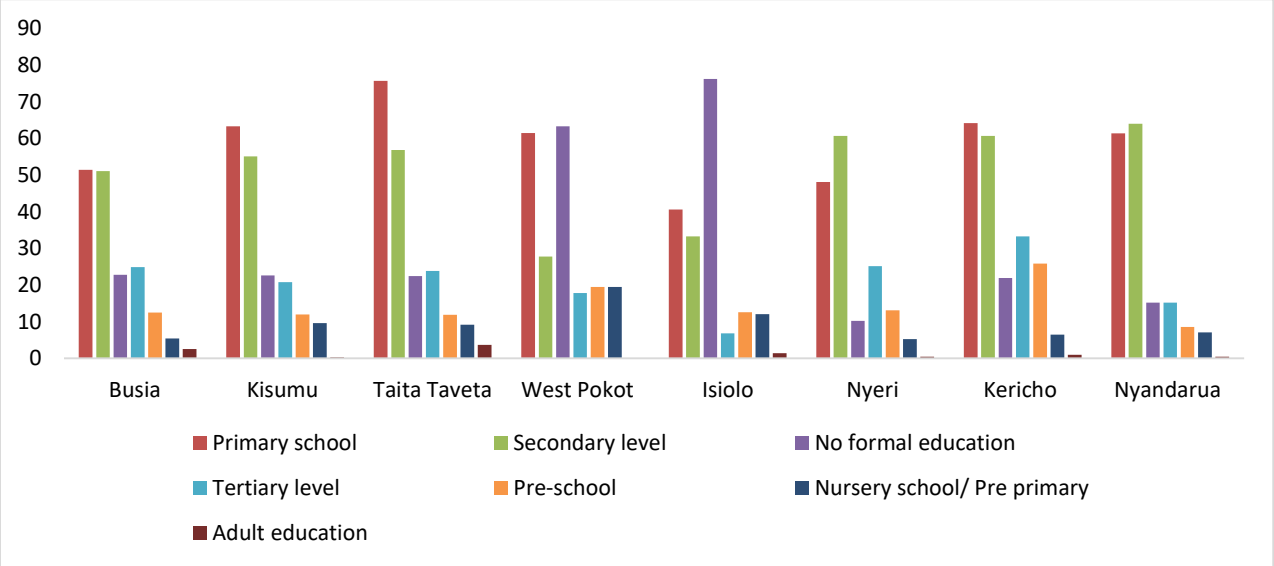

Figure 3: Level of Education for Household Members

In household ownership of livestock, chicken was the most dominant. Sheep was a major livestock asset in Isiolo (73%) and Nyandarua (54%) counties. Cattle was found to be a major asset in most counties with Kericho leading (89%) and the least being Isiolo (18%). In terms of livestock control, analysis by gender showed that women tend to control small animals which they can comfortably sell without consulting in order to handle household emergencies. Notably, no woman had control

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of camels (Figure 4). In most communities, large livestock are owned and controlled by men, but the women can use the milk to feed the household.

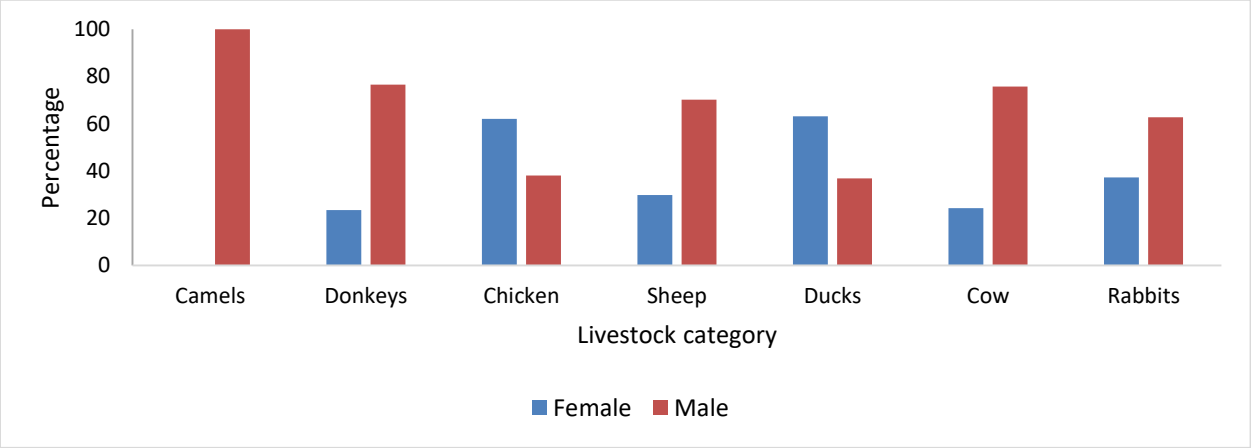

Figure 4: Proportion of Household Control of Livestock in the Eight Counties by Gender

In ownership of household assets, over 50% of households owned cell phones. Kericho County recorded the highest number of households owning the selected assets while Isiolo registered the lowest in all the assets. The high percentage of households who own various assets in kericho could be attributed to income access mainly from tea estates and milk which are the dominant income earning activities in the area. The low percentage of households who own various assets in Isiolo could be attributed to lack of access to income since Isiolo County lies in the arid zone which is not favorable to most agricultural activities.

Ownership of land is key in access to credit especially possession of title deeds. On average, farmers in the selected counties owned 1.7 acres of cultivated land (annual and permanent crops) and 1.5 acres of uncultivated land (Grazing and homestead). Farmers in West Pokot County owned largest pieces of land averaging 2.19 acres for the cultivated and 4.17 acres for uncultivated. The large tracks of land in West Pokot can be attributed to the fact that most farmers practice grazing hence, leave large pieces of land uncultivated. In Isiolo, most farmers did not record the land sizes since the land is communally owned.

Characterization of Existing Rural Finance Markets that can Enhance Adoption of Climate Smart Agricultural Crop and Livestock Technologies among Small Holder Farmers in Kenya

Methods of Financing Farming Activities

The study sought to find out how farmers were funding their farming activates. Notably, a large proportion (78%) of households financed their farming activities from own savings while 19% used funds from rotating savings and credit associations. Across counties, households fund their farming activities using both formal and informal sources though majority preferred informal sources (Table 2).

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Table 21: Proportion of Households Using Various Methods of Financing Farming Activities

	Busia	Kisumu	Taita Taveta	West Pokot	Isiolo	Nyeri	Kericho	Nyandarua	Overall
Own Savings	72.4	80.9	79.5	79.0	77.3	81.2	71.4	89.3	78.3
ROSCA	7.0	25.2	36.1	26.7	30.9	11.6	17.7	4.6	19.1
One acre fund	17.8	0.6	0.0	0.0	0.0	0.5	11.8	0.0	5.1
Sacco Loans	2.1	1.2	2.3	1.9	0.5	8.7	7.4	14.7	4.2
Bank Loans	3.5	2.1	4.1	5.7	10.1	3.4	3.0	4.1	4.2
Loans from friends and relatives	2.3	1.8	4.6	13.8	1.9	2.9	2.0	1.5	3.6
Mobile loans	3.5	1.5	4.1	1.4	0.0	3.9	3.9	3.0	2.7
Shylocks	1.2	0.0	0.5	3.3	0.0	1.9	0.0	0.5	0.9
Uwezo funds	0.5	0.3	3.7	0.0	0.5	0.5	1.0	0.0	0.7
Agricultural development fund (ADF)	0.7	0.3	1.8	0.0	0.5	0.0	1.0	0.5	0.6
Agricultural finance corporations (AFC	0.2	0.3	1.8	1.0	0.0	0.0	0.5	0.0	0.4

The study sought to find out the proportion of households who needed loan in the last 5 years and the households accessing credit from different sources. Findings revealed that slightly over half (55%) of households across the selected counties needed loans in the last 5 years preceding the study. The high demand for loans by selected counties indicates the need for financial interventions. Rotating and savings credit associations (ROSCAs) were the main credit source for most (37%) households, followed by savings and credit co-operatives (SACCOs) (17%) banks (14%), micro finance institutions (12%) and farmer groups (11%). A few, (6%) households sourced credit from relatives and one-acre fund while government owned institutions such as AFC and ADF supplied only 4% of credit requirements. Very few, (2%) sourced credit from shylocks. The popularity of ROSCAs could probably stem from their ease of access in terms of availability, friendly terms of credit and repayment. ROSCAs also serve as saving vehicles in addition to offering credit, which improves credit worthiness in the absence of assets and other collateral for credit from formal financial institutions. There is need for financial institutions to leverage on existing models used by ROSCAs to increase access to financial services.

In order to measure the effectiveness of various credit sources, the study sought to establish if the farmers who needed credit received it. Findings showed that 81% of households who needed credit received it, thus, an indication of high access to loans. County analysis revealed that households who needed credit and got was highest in Kericho (95%), West Pokot (91%) and Busia (91%), Nyeri (88%), Kisumu (77%) and Nyandarua (74%). Isiolo County had the least (62%) proportion of households who received credit which can be attributed to religious beliefs that are against conventional borrowing as well as lack of assets that could be used as collateral. The findings from FGDs revealed that there is lack of suitable financial market services that conform to prevailing

religious ideals in Isiolo County whose inhabitants are predominantly Muslim. Moreover, high poverty levels coupled by lack of relevant collateral render many households less credit worthy.
In order to measure the efficiency of financial institutions, the study needed to establish if the amount applied was at par with what was received. Results showed that majority of households (92%), who requested credit got the amount applied for. This shows high efficiency of the financial service providers in the studied counties. Access to the amount of credit requested was highest in Kisumu (97%), Busia (96%), West Pokot (94%), Nyeri (95%), Kericho (93%) and Nyandarua (85%) counties and lowest in Taita Taveta (79%). Findings from FGDs and KIIs revealed that the high access to credit by households in all the counties is attributed to possession of assets that are required as collateral by finance institutions.

For households who applied for credit and did not get, the study sought to understand the reasons. The findings showed that 52% of households indicated lack of requirements set by financial institutions and lack of assets to serve as collateral (29%). Other reasons were; long distance to financial institutions, lack of security, lack of information on financial institutions and religious beliefs. This is an indication of the central role collateral plays in access to credit as revealed by most households. The relationship between credit access and acquisition of assets is a paradox in that households need credit to acquire assets while the opposite is also true, leading to a vicious cycle where less endowed households are systematically locked out of credit facilities. The results call for application of a different model of lending. For instance, Jack, et al. 2018 have shown that replacing loans with high down payments and stringent guarantor requirements with asset collateralized loans increased loans uptake from about 2% to 42%.

The study established that some households did not borrow credit and investigated the reasons for not borrowing. Lack of information was the major reason for not taking credit (21%). Other reasons were lack of interest (20%), insufficient funds to repay (16%), fear to default (8%), high interest rates (7%), sufficient funds (6%) and lack of security (5%). Most households who indicated lack of information on loans were in West Pokot (57%). In Isiolo, religious beliefs against credit was the main reason for not taking loans a scenario attributed to predominance of Islam religion in the county. The results in Isiolo agree with those of Demirguc-Kunt, et al. (2015) that in countries with almost exclusively Muslim populations, 25 percent of adults without an account reported religious reasons as a barrier. There is need for developing products compatible with the principles of Islamic finance could be a key to expanding access to credit.

Requirements for Borrowing

Findings showed that group membership was the main requirement for borrowing credit as was indicated by 40% of the households. This was followed by need for guarantors (33%), possession of share capital (31%) and collateral (18%). Other requirements were savings, active mobile line user, identity card, and registration fee and bank statement.

Loan Default

Majority of households (93%), reported they had not defaulted on their loan payment, indicating a high repayment rate across the selected counties. Loan repayment rates were highest in Isiolo (100%), followed by Busia (99%), Kisumu (94%), Kericho (94%), West Pokot (93%) and Nyeri

(92%), Taita Taveta (84%) and Nyandarua (81%) counties. This trend serves as a motivation for financial institutions to upscale their services in the selected Counties. However, for the few who defaulted, reasons included; reduced income (59%), late payments (13%), employment loss (12%), poor agricultural production (9%) and sickness (6%). The penalties for defaulters included; Paying fines (35%), additional interest (32%), being blacklisted (18%) and reduction of loan limits (11%). Attaching of assets by auctioning and forcing guarantors to pay constituted 2% each respectively.

Saving Income and Saving Institutions

Findings by gender revealed that more men (83%), in comparison to women (18%), were saving income. This scenario can be attributed to the fact that most rural women use their income for household purposes such as buying food, school fees and other practical needs in the family, hence unable to save. Similarly, women are not more inclined to revenue generating activities. On the other hand, most men save for household developments for instance, construction of houses and purchase of large livestock. Nevertheless, the culture of saving is noted in all counties and among both genders. Most household members (40%) were saving income in ROSCAS, followed by mobile platforms (36%). Other saving institutions included SACCOs and Banks (18%) each respectively.

In Isiolo, most household members were saving in mobile banking (51%) a factor that can be attributed to long distances to the physical location of banking institutions. In Nyandarua and Nyeri , most members were saving income in SACCOs (51% and 42% respectively) and mobile banking (38% and 40% respectively). This can be attributed to the nature of agribusiness in the two Counties (Nyandarua and Nyeri), which is inclined to saving in SACCOs and cooperatives. In Busia, most farmers (40%) were in mobile banking which can be attributed to ease of transactions since it is a boarder County. Further, results revealed that majority of household members were using individual model of saving (80%), while 33% were saving through group. There is therefore need for capacity building and sensitizations since the culture of saving is noted in all counties

Access to Insurance Institutions

Findings revealed that farmers rarely access insurance for their farming activities. The study noted a negligible number of farmers who had insured their livestock in west Pokot. Findings from FGDs revealed that farmers do not view insurance as a necessity. There is therefore need for capacity building and sensitization for farmers to understand insurance.

Characterization of Existing Rural Finance Products and Services that can Enhance Participation in Climate Smart Technologies among Value Chain Players

Organization Type and Services Offered by Financial Institutions

The study sought to establish the type of financial institutions available in the study area. Majority of financial institutions were Banks, SACCOs and Micro Finance (83%) while 17 % were insurance firms. Banks, SACCOs and Micro Finance provide credit and saving services. Some commercial banks also offer insurance services on asset, agricultural production, education, health and life cover. About a quarter of the financial institutions sampled conduct training for their customers and a meagre 4% provide other services, for instance, women empowerment, transport,

salary processing, international financial services, investment advisory, institutional banking and agricultural finances. Provision of credit services is the major service provided across all the 8 counties. The findings confirm there were fewer players in insurance sector than in other domains of financial markets. This could be attributed to the low uptake of insurance products in rural financial markets probably caused by lack of information. Notably, majority of financial institutions (87%) were formal while 13 % were informal such as the Rotating and savings credit associations (ROSCAs) and shylocks.

Period of Existence and Geographical Coverage of the Financial Institutions

The average period of existence for financial institutions was 24 years with formal institutions such as banks having longer periods of operation. Figure 5 shows results on the geographical coverage of financial institutions that participated in the survey. Notably, 36% of financial institutions had national wide coverage while 22% operate at ward level. Others, (15 %) operate within the County, internationally (11%), and 8% apiece operate within sub- county and regionally. Isiolo did not report any financial institution with national wide network. This can be attributed to dominant Muslim religion in the area which influences the financial institutions to be customized to the unique needs of local community which are different in other counties. The survey findings corroborates Salifu (2020) that mainstream financial institutions are found in urban centers whilst majority of the poor in developing world live in rural areas where financial services are either very limited or non-existent. As a result, if financial institutions are to fill this gap in Kenya, then they must reach out to the rural poor. This can be achieved at a minimum cost through following the Grameen model where offices should be setup in villages very close to the rural poor where the productive poor can be reached at a lower cost. This approach would make the rural financial institutions more effective.

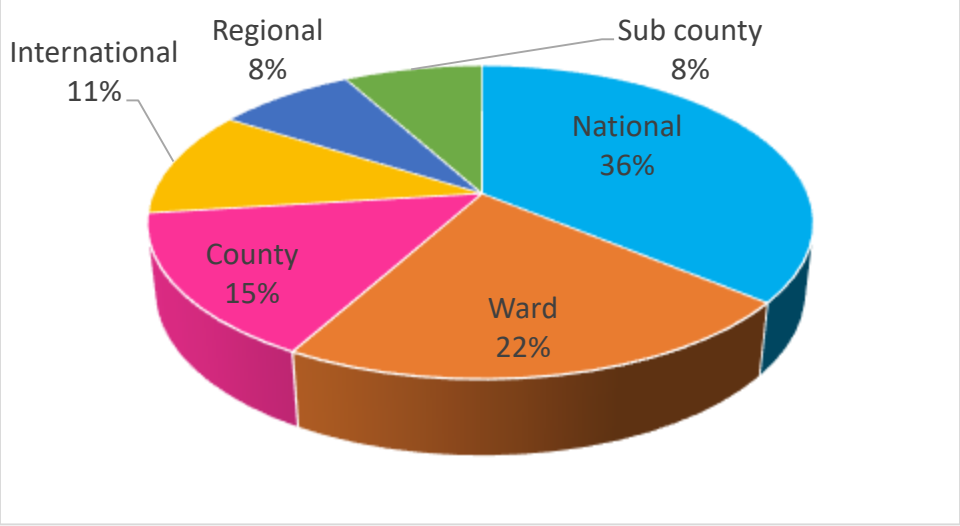

Figure 5: Geographical Coverage of the Financial Institutions

Sectors in the Economy Served by the Financial Institutions

In Figure 6, majority of financial institutions (35%), served agriculture sector, this was followed by traders (informal and formal players like retailers) (26 %), 19% transporters, manufacturing sector (15%) and 5 % were from other sectors such as civil servants, educational institutions, service industry and health. Of the actors in the agricultural value chains, 28% were farmers/crops and livestock producers, 21% were traders in either crops or livestock products, 19% transporters of agricultural commodities, 18% middlemen that link farmers to the final consumers or the source of raw materials and 10% were agro-processors. The findings show that agricultural sector is the major source of client among financial institutions in comparison to other sectors in the economy which indicates that participants in the agricultural value chains that include farmers have access to services offered by financial institutions and therefore smallholder farmers' limited use of rural finance services needs to be investigated and addressed to improve utilization of rural finance markets.

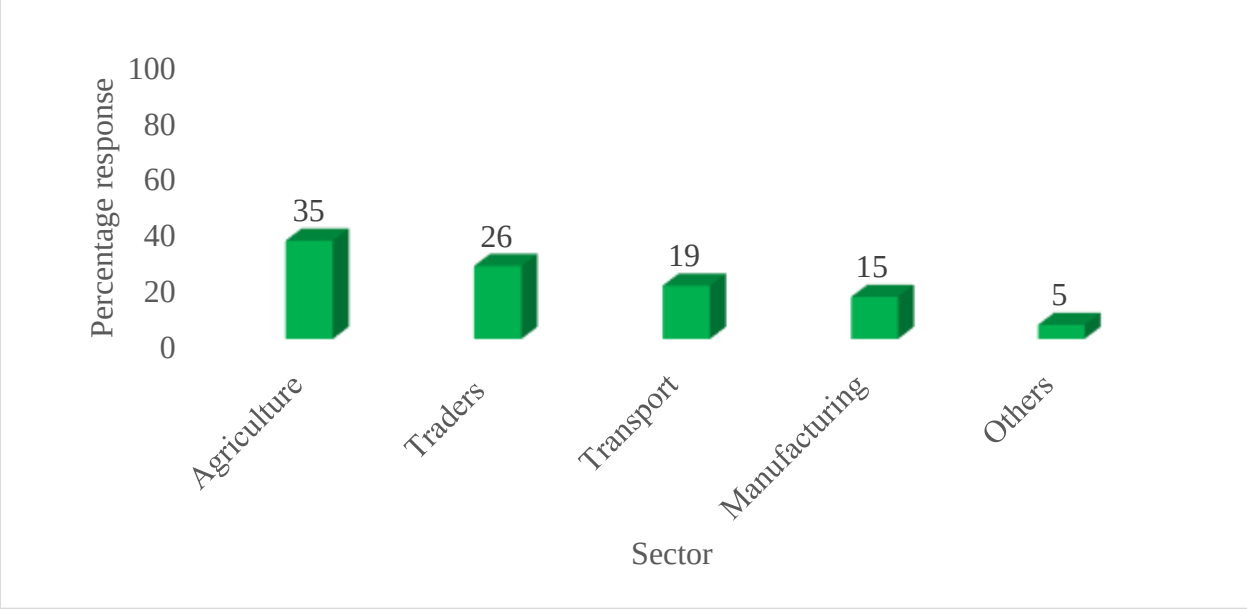

Figure 6: Sectors in the Economy Served by the Financial Institutions

Agricultural Financial Products Offered by Financial Institutions

The results indicate that majority of financial institutions (55%) provide loans/credits, 16% support clients to acquire farm inputs, 9% provide insurance services, and 19% provide savings products that include mobile (e-banking) among other products. Most financial institutions offered credit facilities to farmers who met their minimum terms. Few financial institutions (9%) offered insurance services thus majority of crop and livestock produce were left exposed to various risks with the farmers having no means of being compensated. Only 1% of financial institutions offered training services to their clients meaning majority of farmers took up loans but did not have

financial management knowledge. This leads to difficulties in managing disbursed funds resulting to non-payment of the loan.

Financial Institutions Service Delivery Model and Terms of Lending

The findings show that majority (80%) of financial institutions have adopted individual based service delivery followed by group based service delivery model (59%), while 25% adopted corporation model. Most financial institutions customized their services to individual needs making it convenient for a small scale farmer to receive financial services. Some of the individual loans are accessed through Safaricom, a mainstream communication company *that provide loans like fuliza* and *mshwari*. The Kenya Commercial Bank provides *Tala* loans. The evolution of short-term borrowing using mobile phones has been on the increase probably because of ease of access and minimal conditions required for borrowing. Clients who engaged in group activities had their financial needs catered for. Group-based farming model is popular amongst smallholder farmers due to its various benefits that include group synergy arising from pooling economic and human resources, easy access to loans, amplifying farmers' voice, economies of scale in input acquisition and marketing of produce and eased access to capacity building. Corporations and institutions that engaged in farming activities had their financial needs customized to fit their demand with 25% of the financial institutions offering services to corporations. Results indicated that 65% of financial institutions require borrowers to have guarantors before advancing credit while 52% request for collateral. On the other hand, (28%) of the institutions have other terms of lending such as; group membership, customers accumulated shares, financial records, borrowers' savings, pay slip and not listed with the credit referee Bureau (CRB).

Effectiveness of Lending Institutions

The effectiveness of lending institutions was measured in terms of time taken to process and disburse credit to borrowers and if credit processing time varied with the amount borrowed. Majority (68%) of financial institutions take one month to process credit requests. Other financial institutions take two weeks (7%), only 1% of the financial institutions take one day to disburse loans. Notably, most formal financial institutions took at least a month to process and disburse loans to borrowers. This was disadvantageous to farmers who required loan facilities to handle emergency needs.

Conversely, though informal institutions advance loan facilities within hours, their capacity allows them to offer small amount of credit coupled with a very short repayment period but with high interest rate. This is not convenient to most farmers who take time to produce and sell their harvest to raise revenue to repay the debts. Concerning loan amount and processing time, the time taken to process credit request does not vary with amount requested. The average interest rate was 16 to 17% per annum. The small range in interest rate charged is implies that the financial market is very competitive and those charging high rates are likely to lose clients especially in locations with several banks that offer a wide range of choice.

Journal of Poverty, Investment and Development

ISSN 2520-5196 (online)

Vol.8, Issue 2, No.1. pp.1 - 21, 2023

www.iprjb.org

Financial Institution's Clients Default on Payments and Penalties Enforced

The study established that financial institutions experienced clients' default in loan repayment. Notably, all the financial institutions averred that some of their clients' had previously defaulted on payments of credit. The high level of default rate can be attributed to lack of sufficient training on financial management as indicated during FGDs and the fact that only 1% of the institutions interviewed indicated that they train their clients on personal financial management. The main causes of credit default were cited as; lack of money to repay (41 %), climatic shocks and business failures (31%), and poor planning (28%) (Figure7). Earlier findings showed that only 9% of financial institutions offer insurance services to their agri-oriented clients. Therefore, when unforeseen events occurred, farmers incurred losses with no compensation and thus are unable to meet their financial obligations. Further, poor credit rating by financial institutions is also attributed to high rate of credit default when borrowers who are still servicing ongoing loans are advanced new loans.

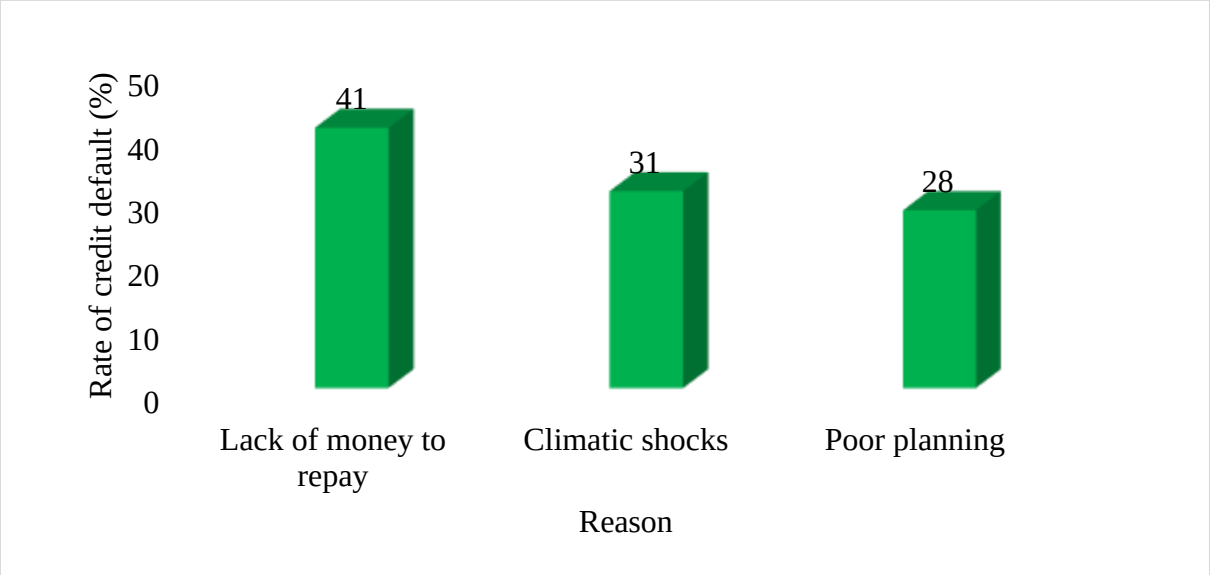

Figure 7: Causes of Credit Default

The findings revealed that the main penalties levied on credit defaulters were additional charges/ interest (45 %). Other penalties included; seizure of the collateral (16 %), blacklisting of the defaulter (12 %), recovery of the credit balance from the guarantors (11 %), follow up with calls (4 %) and withholding of shares contribution (2 %) (Figure 8). Most financial institutions opted to add interest and other additional charges in case the loan surpassed the due payment date. This increased loan burden to the borrowers making it harder to repay. Some of the collateral taken were land, farm machines and animals which further aggravates the financial problems of the farmers as they can no longer engage in farming activities.

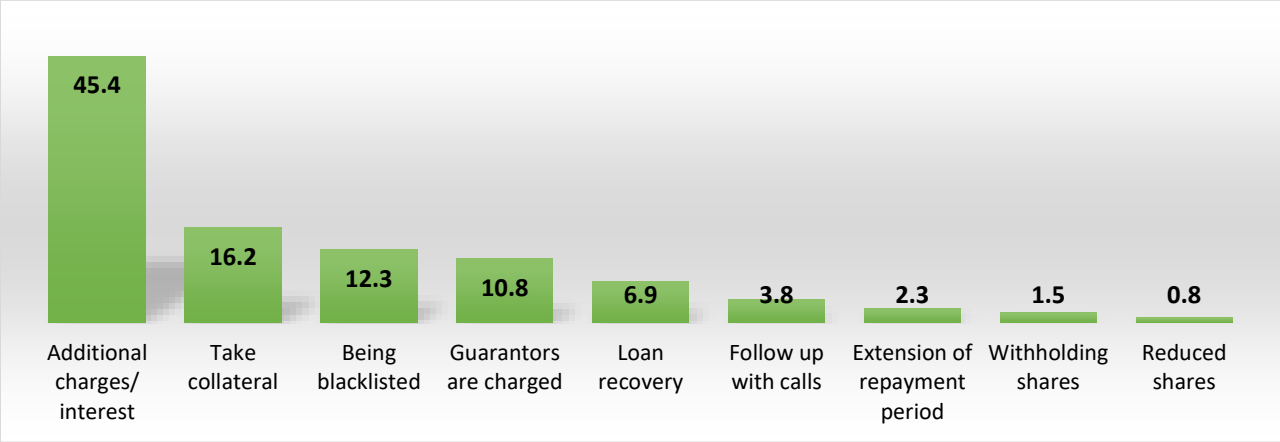

Figure 8: Penalties Enforced to Credit Defaulters

Operations of Insurance Institutions

The study aimed at finding out the insurance settlement period, modes of insurance claim payment, modes of insurance premium payments and insurance premium payment duration. It was established that most financial institutions settle claims within 31 to 60 days (46%). This is followed by those who settle within 30 days (40%) and between 61 to 90 days (14%). Claims settled within 31 to 60 days as indicated by majority (46 %) of the insurance companies does not only hinder indemnity but it is also against the main goal of providing financial protection to the farmer. If a farmer is compensated after 2 months, he/she may not catch up with the season hence, becoming less competitive. This could lead to low income resulting to inability to service loans. The case worsens when some insurance companies (14 %) settle their claims after 3 months or more.

Regarding the mode of insurance claims payment, most firms indicated that insurance claims are paid through cheques (46%). This was followed by payments in cash (28%) and in form of asset replacement (15%). A few (2%), included; mobile money payment systems, through direct credit to their bank accounts and Electronic Funds Transfer (EFT). Majority (46%) indicated they settle claims through writing cheques to banks which requires farmers to have bank accounts. The study noted a strong affiliation between insurance companies and banks which should be tapped to promote farming activities hence increasing farmers' revenue.

Composition of Financial Institutions' Agricultural Clients and Average Loan Repayment Rate by Gender

The results on gender composition of financial institutions' agricultural clients indicate adult male composition was 44%, adult female (33%), youth male (22%) and youth female (18%). The findings indicate that men are the main agricultural clients for financial institutions. This could be due to possession of collaterals such as land title deeds which is a requirement for credit acquisition. Findings indicate that generally adult females (63%) and Youth females (51%) exhibits better loan repayment rates compared to adult males (59%) and youth males (46%). This

can be attributed to the risk taking behavior of male gender. Male gender could be borrowing to venture into risky agricultural activities which may not generate sufficient returns to repay the loan and interest. Other reasons why more men than women do not pay loans include loan diversion to purposes that were not the original intention and borrowing from multiple sources leading to over-indebtedness.

However, earlier results in this study show that male and female gender have almost similar loan default rates. The persons with disability rank below both youth and adult males and females in loan default. This shows that people with disability may be struggling to engage in meaningful economic agricultural activities. Some of the reasons for loan default across genders include; risk posed by COVID 19 pandemic, high interest rate, insufficient funds, calamities and illness, loan diversion (funds for unintended purpose), crop failure, over-indebtedness (having many loans), and using the funds for gambling.

Challenges Facing Financial Institutions in Service Delivery

Financial institutions faced challenges that impede their service delivery that included:

- Stiff competition among other players
- Delinquent loans(late repayments), sickness and diseases which make people delay in loan repayments
- Inadequate funds for lending, credit demand surpasses the amount saved,
- High default rates, non-performing loans due to recurring defaulters
- Insecurity
- High interest rate
- Climatic changes affecting agricultural activities
- Majority of the clients being old people
- Majority of clients live in remote places
- Most people fear to take insurance due to the thought that insurance “rob” off their money,
- Mobile phone network connection problems affecting m-financial services
- Members make claim for things they have not insured
- Lack of appropriate collaterals.

Proposed interventions to address these challenges

- Empowerment of farmers through sensitization
- Training to provide financial literacy
- Embrace mobile banking
- Train farmers to embrace technologies to deal with droughts
- Diversification of agricultural activities including adoption of intensive agricultural farming practices
- Funds set aside by county government to boost farmer groups
- Empowering youths with farming skills and equipment

- Shylocks should be identified as legal entities,
- Sensitization on using mobile apps and USSD,

CONCLUSION AND RECOMMENDATIONS

Conclusions

Rotating and savings credit associations (ROSCAs) were the main credit source for most households (37%). The findings point to lack of suitable financial market services that conform to prevailing religious ideals in Isiolo County whose inhabitants are predominantly Muslim. Group membership was the main requirement for borrowing credit as was indicated by 40% of the households. Guarantors were the second (33%) most important requirement followed by possession of share capital (31%) and collateral (18%). Majority of households (93%), reported they had not defaulted on their loan payment, indicating a high repayment rate across the selected counties. The penalties for defaulters included; Paying fines (35%), additional interest (32%), being blacklisted (18%) and reduction of loan limits (11%). Findings indicted that more men (83%), in comparison to women (18%), were saving income, a scenario that can be attributed to the fact that most rural women use income for household purposes while men usually save income for household developments for instance, construction of houses. Nevertheless, the culture of saving is noted in all the selected counties and among both genders. Most members (40%) were saving income in ROSCAS, followed by mobile (36%). Other institutions included SACCOs and Banks (18%) each respectively. Findings revealed that farmers rarely access insurance for their farming activities.

In characterization of other actors' participation in rural financial markets, majority cited that they access loans from various sources to finance their business. Unlike farmers, other actors get loans through mobile phones (35%) while short term loans were borrowed from different providers. Notably, most actors were accessing the *safaricom's* mode of accessing loans; *fuliza*, *mshwari* and *tala* from KCB. The evolution of short-term borrowing using mobile phones has been on the increase probably because of ease of access and minimal conditions required for borrowing. The model of borrowing for most of other actors was individual (85%). A majority (91%) of other actors interviewed indicated that they had not defaulted loans.

In characterization of financial institutions, 36% have national wide coverage while 22% operate at ward level. Others, (15 %) operate within the County, internationally (11%), and 8% apiece operate within sub- county and regionally, while 1% operate within other areas such as village level. In contrast, Isiolo County did not report any financial institution with national wide network. This can be attributed to the fact that in Isiolo, financial institutions are customized to the unique needs of local community which may be different in other counties. Majority of financial institutions (84%), serve agriculture sector.

Recommendation

1. Ministry of agriculture in collaboration with financial institutions need to conduct financial interventions to unlock potential income sources in Isiolo while in Kericho and other Counties, interventions that promote savings are necessary.
2. In order to increase utilization of rural finance market services by various actors, following factors are key; Capacity building on both financial literacy and digital banking, locality of financial services should be closer to clients especially those in remote areas, a gender-transformative approach in order to increase women access to rural financial services while also alleviating the gender inequalities in socio-cultural norm.
3. Financial institutions could leverage on existing models used by ROSCAs to increase access to financial services.
4. Since majority of financial institutions (84%), serve agriculture sector, there is need for financial institutions to ensure that services and products that are friendly to farmers exist in their institutions.

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