

# DETERMINANTS OF SEMI-FORMAL CREDIT PARTICIPATION AMONG RURAL FARM HOUSEHOLDS IN KAKAMEGA COUNTY, KENYA

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**Abstract.** Recently, devolved governments in Kenya have been offering semi-formal credit programs to rural households. Despite the key role of this type of credit in enhancing rural household welfare, little is known on the determinants of rural farm household participation in the credit programs. Therefore, this study aimed to identify the factors influencing farmers' participation in the semi-formal credit program in Kakamega county. It embraced the quantitative research method. A multi-stage sampling approach was used to gather data from 179 respondents. The data collected was analyzed using descriptive statistics and a probit model on STATA software. The results indicate that the semi-formal credit accessed by rural farm households was allocated to both on-farm and off-farm enterprises. Also, factors that significantly influenced household participation in semi-formal credit included farming experience, occupation of the head of the household, group membership, distance to credit source, distance to the nearest market, and access to financial training. Based on the study results, different stakeholders should offer financial training, thus equipping farmers and entrepreneurs with the skills required for effective credit access and utilization. In addition, lending institutions need to consider bringing services closer to farmers and entrepreneurs to reduce the transaction costs incurred in accessing loans. On top of this, farmers and entrepreneurs need to be encouraged to join socioeconomic groups and engage in sustainable off-farm activities so that they can access useful information on credit access and utilization.

**Keywords:** devolved governments, semi-formal credit program, rural farm households

## INTRODUCTION

Agriculture plays a critical role in promoting economic development and enhancing food security in Sub-Saharan Africa (Conceição et al., 2016). However, financial constraints are among the major challenges that hamper agricultural productivity in the region. According to Auma and Mensah (2014), developing countries suffer from underdeveloped and inefficient financial markets. Most of the financial institutions in these countries are located in urban regions, making it expensive for rural households to access credit markets. Also, formal lending institutions have constraining policies that discourage borrowers. For instance, formal financial institutions demand collateral such as land, livestock, income, and wage accounts before allowing an individual to access credit.

Credit constraints harm the productivity of small-scale enterprises (Mukasa et al., 2017). In line with this, small-scale farmers who do not have access to credit have inadequate finances to adopt technology and purchase farm inputs. Also, inadequate funding due to lack of credit prevents farm households from expanding their farm enterprises. As well as this, credit access is a significant challenge that affects off-farm small-scale enterprises in developing nations (Ahiawodzi and Adade, 2012). Therefore, relaxing credit constraints is a better means of enhancing the performance of enterprises.

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In Kenya, policies are focussed on developing the semi-formal lending sector to enhance access to credit for poor households (Johnson, 2016). Several national and international credit programs offer semi-formal credit to selected borrowers to attain certain development targets. According to Singh and Abate (2018), access to and use of credit obtained from semi-formal institutions enables poor households to save. In this case, they can use borrowed funds to invest and commit themselves to repaying later on. The implication is that semi-formal lending institutions contribute towards job creation and poverty alleviation.

The typical credit markets in Kenya include informal, semi-formal, and formal. A central monetary authority regulates the formal credit markets. Conversely, the informal credit markets are not regulated (Johnen et al., 2021). Semi-formal markets have both informal and formal features. Semi-formal lending institutions are legally recognized in Kenya. Various policies have been developed to regulate the operation of these institutions. These include the Cooperative Societies Act, the Microfinance Act of 2008, the Banking Act, and the Non-governmental Coordination Act (Francis et al., 2013).

The country's common semi-formal lending institutions include non-governmental organizations (NGOs), government support programs, micro-finance institutions, and savings and credit cooperative societies (SACCOs) (Johnson and Nino-Zarazua, 2011). Semi-formal institutions provide financial services to small and medium enterprises and low-income households at a lower cost than formal lending institutions. The financial services provided include direct deposit, savings services, insurance, cash loans, and money transfer (Francis et al., 2013). In cooperation with NGOs, intergovernmental organizations (IGOs) such as the World Bank and the United Nations play a critical role in alleviating poverty through funding micro-finance institutions.

Socioeconomic, institutional, and enterprise-related factors influence semi-formal credit participation among rural households. A study by Kiplimo et al. (2015) identified access to extension services and education level as factors that had a significant positive effect on semi-formal credit participation among smallholder farmers in Kenya. Conversely, distance to credit source and household income had a significant negative effect on semi-formal credit participation. In addition, it has been reported that entrepreneurship training, age of agri-enterprise, and location of agri-enterprise have a significant

positive influence on the utilization of semi-formal credit obtained from non-governmental organizations in Kenya (Chepkwony et al., 2019). According to Alio et al. (2017), loan contract characteristics, monitoring of credit utilization, duration of membership, and collateral requirements negatively influenced participation in credit offered by savings and credit cooperative societies. However, access to extension services positively and significantly affected credit utilization.

Devolved governments in Kenya have introduced programs to enhance the welfare of their residents. These programs include providing semi-formal credit to boost small and medium enterprises to transform the local economy. In line with this, the county government of Kakamega introduced a credit program known as *Mkopo mashinani* to support the development of small-scale enterprises (Okwach, 2015). This program was an intervention aimed at alleviating poverty among rural households. It was implemented in the period from 2015 to 2017. It targeted individuals who were members of well-established socioeconomic groups. In this case, group members acted as guarantors for each other to obtain the county government's semi-formal credit. This credit was offered at an affordable interest rate paid on a reducing balance basis.

In recent years, there has been an emergence in the use of semi-formal credit offered by devolved governments to enhance farm and off-farm enterprises (Okwach, 2015). Despite the potential of the credit to enhance rural farm household welfare, little is known about the factors influencing participation in this type of credit among rural farm households. Therefore, this study sought to fill the gap by investigating the determinants of smallholder farmers' participation in the county government's credit program of Kakamega, Kenya. As well as this, it sought to profile the enterprises that benefited from the semi-formal credit offered by the county government.

## METHODOLOGY

### Study area

The study was conducted in Kakamega, the county that initiated the credit program. Kakamega County borders Siaya and Busia Counties to the West, Nandi County to the East, Vihiga County to the South, Trans Nzoia and Bungoma Counties to the North, and Uasin Gishu County to the Northeast. The county covers approximately

3051.3km<sup>2</sup> (KBS, 2017). In addition, it has an approximate population of 1,660,651 residents. The county has favorable agricultural conditions, with two rain seasons per year. Its main economic activities are agriculture and small-scale business enterprises.

The county has two ecological zones, namely the Lower Medium and the Upper Medium. The Lower Medium covers a substantial portion of the county's southern part, including Kwhisero, Matungu, Butere, and Mumias. Sugar cane production is the main economic activity in this zone. However, some farmers engage in maize, groundnut, tea, sweet potato, and cassava production. On the other hand, the Upper Medium covers the Northern and Central parts of the county, including Ikolomani, Lurambi, Shinyalu, and Malava, which intensively deals with beans, maize, and horticultural production, mainly on a small scale; and Likuyani and Lugari, where large-scale farming takes place. The common enterprises operated in the county include dairy, poultry, sugarcane production, retail and wholesale shops, food and beverage outlets, hotels, carpentry, cybercafés, agrovets, salons, hardware stores, welding and fabrication, clothing retail outlets, motorcycle repairs, mobile banking services and transport service providers (Ouma, 2018).

### Research design and sample size

The study used a multi-stage sampling approach in the selection of respondents. In the first stage, Kakamega county was purposely selected since it had launched the county credit program. In the second stage, the Malava sub-county was purposely selected since it had the highest number of beneficiaries than the other sub-counties, thus allowing the researcher to get the desired sample. In the last stage, systematic sampling was used to select 179 respondents from the known population of 325 smallholder farmers registered in community-based organizations within the sub-county. The sample size was determined using the sample size formula for the known population (Yamane, 1967). The formulae can be specified as shown below:

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

where:

- $n$  – is the desired sample size,
- $N$  – is the population size, and
- $e$  – is the acceptable error (0.05).

The data used in the study were collected using semi-structured questionnaires. This was done with the assistance of trained enumerators. The questionnaires were administered by conducting a personal interview with the respondents. Both qualitative and quantitative data was collected. These data included socioeconomic characteristics such as the age, gender, education level, main occupation, and marital status of the head of the household, as well as farm size, and household size, among other variables. In addition, the data on institutional factors included access to credit, membership of socioeconomic groups, distance to nearest formal credit source, and land ownership, among others. All the collected data were then entered into a computer and analyzed using STATA software.

### Analytical framework

The study used descriptive statistics to summarize the data gathered. The results were presented using tables of percentages and frequencies. According to Chikwama (2010), descriptive statistics is suitable for analyzing qualitative data. In addition, the probit model was used to establish factors influencing participation in semi-formal credit programs among rural farm households. This model is suitable for analyzing a dependent variable with a binary outcome. Following Verbeke et al. (2000), the function form of the probit model can be specified as shown below:

$$Y_i^* = \beta_0 + \sum_k \beta_k \chi_{ki} + \varepsilon_i \quad (2)$$

where:

- $i$  – indicates the number of respondents,
- $Y_i^*$  – is the decision to participate in the credit program ( $Y_i^* = 1$  for participants;  $Y_i^* = 0$  otherwise),
- $\chi_i$  – is the independent variable likely to determine the probability of using semi-formal credit,
- $\beta_k$  – denotes the effect of the independent variable on the dependent variable,
- $\varepsilon_i$  – is the stochastic term with zero mean and constant variance.

## RESULTS AND DISCUSSION

Table 1 presents descriptive statistics of the rural farm households' socioeconomic characteristics. The results indicate that more households were managed by males (69.27%) than females (30.73%). In addition, 49.16% of household managers engaged in farming as their main

**Table 1.** Selected socioeconomic characteristics of rural farm households

Variable	Frequency	Percent
<b>Gender of household head</b>		
Female	55	30.73
Male	124	69.27
<b>Main occupation of household head</b>		
Farming	88	49.16
Salaried public sector	25	13.97
Salaried private sector	7	3.91
Wage, on-farm	1	0.56
Business,	51	28.49
Pension/retire	5	2.79
Others	2	1.12
<b>Marital status</b>		
Single	11	6.15
Married	146	81.56
Divorced	3	1.68
Widowed	19	10.61
<b>Group membership</b>		
Non-members	86	48.04
Members	93	51.96
<b>Access to financial training</b>		
No access	52	29.05
Access	127	70.95
<b>Ownership of off-farm enterprise</b>		
Do not own off-farm enterprise	58	32.4
Own off-farm enterprise	121	67.6

N = 179

Source: own elaboration from the data collected.

occupation, 13.97% were employed in the public sector, 3.91% were employed in the private sector, 0.56% depended on wages from on-farm work, 28.49% engaged in business, 2.79% earned a pension and 1.12% engaged in other occupations. Regarding marital status, most household managers (81.56%) were married, 6.15% were single, 1.68% divorced, and 10.61% were widowed. The results showed that 51.96% of the farmers

were members of a socioeconomic group, while 48.04% were non-members. Regarding access to financial training, 70.95% of the farmers had access, while 29.05% had no access. Also, the results showed that 67.6% of the households owned and operated off-farm enterprises, while 32.4% purely engaged in farming.

Table 2 presents the mean difference of household characteristics and institutional factors by farmers' credit participation status for all continuous variables used in the study. Out of 179 respondents interviewed, 83 were program participants, while 96 were non-participants. The two groups' standard deviations and mean columns are presented in the table. The mean is the arithmetic average of a set of given numbers, while the standard deviation is a measure of how the data is clustered around the mean (Lind et al., 2019).

The aggregate mean of farming experience was 21 years. This consisted of 24 years among the program participants and 19 years among the non-participants. The t-test results indicate a significant difference in the years of experience between the two groups at a 5% level. This implies that farmers with less experience were less likely to participate in the credit program than those with high farming experience. Chandio et al. (2017) associate increased farming experience with improved productivity. The implication is that more experienced farmers can easily access credit since they tend to be more financially stable than their counterparts.

The aggregate mean distance to the nearest formal credit source was 2.51Km. The t-test result indicated a significant difference in distance to the nearest formal credit source between the groups at a 1% level. A short distance to a credit source positively influences household participation in credit programs (Alabi et al., 2016). In contrast, a long distance to a credit source can minimize the chances of participation in the credit market among rural households (Kiplimo et al., 2015).

Table 3 presents categorical variables for the sampled households. The association between the main occupation of household head and participation in the credit program was significant at a 5% level. The major occupation of household managers in the study area was farming, which accounted for 49.16%. In addition, 28.49% of household managers engaged in businesses, 13.97% were employed in the public sector, 3.91% mainly worked in the private sector, 2.79% relied on a pension, and 0.56% earned wages on-farm, while 1.12% engaged in other occupations.

**Table 2.** Summary statistics for continuous variables

Variable	Non-participants, <i>n</i> = 96		Participants, <i>n</i> = 83		Aggregate mean N = 179	t-test
	Standard deviation	Mean	Standard Deviation	Mean		
Household size (Number of household members in a dwelling unit)	2.81	6.38	3.53	7.07	6.70	-1.470
Age of household head (years)	13.82	46.82	11.53	49.58	48.10	-1.435
Schooling years of household head	3.62	10.50	3.29	10.18	10.35	0.614
Farming experience	13.86	19.15	14.09	24.05	21.42	-2.342**
Farm size (acres)	1.83	2.28	1.80	2.25	2.27	0.124
Distance to the nearest formal credit source (km)	3.31	3.22	3.03	4.54	3.88	-2.617***
Number of extension contacts(per year)	2.90	1.74	2.14	1.58	1.58	0.8858

\*\*\*, \*\* denotes significant at 1% and 5% respectively.  
Source: own elaboration.

**Table 3.** Summary statistics for binary and discrete variables

Variable	Description	Non-participants (%) <i>n</i> = 96	Participants (%) <i>n</i> = 83	Aggregate (%) <i>n</i> = 179	Chi-square
Gender of household head	0 = Female	32.29	28.92	30.73	0.2384
	1 = Male	67.71	71.08	69.27	
Main occupation of household head	1 = Farming	56.25	40.96	49.16	15.7024**
	2 = Salaried public sector	14.58	13.25	13.97	
	3 = Salaried private sector	5.21	2.41	3.91	
	4 = Wage, on-farm	1.04	0.00	0.56	
	5 = Business	20.83	37.35	28.49	
	6 = Pension/retire	0.00	6.02	2.79	
	7 = Others	2.08	0.00	1.12	
Marital status	1 = Single	6.25	6.02	6.15	0.8798
	2 = Married	83.33	79.52	81.56	
	3 = Divorced	1.04	2.41	1.68	
	4 = Widowed	9.38	12.05	10.61	
Ownership of off-farm enterprise	0 = No	37.50	26.51	32.40	2.4564
	1 = Yes	62.50	73.49	67.60	
Membership and role played in a group	0 = No	59.38	34.94	48.04	10.6477***
	1 = Yes	40.63	65.06	51.96	
Land ownership	1 = Inherited	71.88	69.88	70.95	0.7192
	2 = Purchased	21.88	20.48	21.23	
	3 = Rented	6.25	9.64	7.82	

\*\*\*, \*\* denotes significant at 1% and 5% respectively.  
Source: own elaboration.

The association between household participation in the credit program and group membership was significant at a 1% level. In line with this, 51.96% of households in the study area had individuals who undertook leadership roles in socioeconomic groups. In comparison, 48.04% had individuals who were not leaders in socioeconomic groups. Among the participants, 65.06% had leaders in groups, while 34.94% did not. On the other hand, 40.63% of the non-participant households had individuals who were leaders in socioeconomic groups.

In comparison, 59.38% were those whose individuals did not play a leadership role in socioeconomic groups. The implication is that group membership and the role played by an individual in a socioeconomic group significantly influence household participation in the credit program. A study by Dzadze et al. (2012) argues that group membership positively and significantly affects household credit access.

**Table 4.** Showing types of enterprises that benefited from the credit accessed

Enterprise	Frequency	Percentage
Dairy	7	8.43
Poultry	5	6.02
Vegetables	4	4.82
Tomatoes	5	6.02
Maize and beans	19	22.89
Sugarcane	15	18.07
Shop	14	16.87
Buying and selling farm produce	23	27.71
Welding	2	2.41
Brick making	3	3.61
Barber and saloon	6	7.23
Motorbike rider service providers	3	3.61
Agro vet	3	3.61
selling clothes	7	8.43
Posho-mill	3	3.61
Tailoring	5	6.02
Others	7	8.43

*n* = 83 (sub-sample of program participants)  
Source: own elaboration.

### Types of enterprises supported with credit access

The credit accessed by program participants was allocated to farm and off-farm enterprises as presented in Table 4. The sub-sample of program participants consisted of 83 respondents. Agricultural enterprises that benefited from the credit accessed by farmers included dairy, poultry, vegetables, tomatoes, maize/beans, and sugarcane. Most farmers (22.89%) preferred to invest in maize/beans, followed by sugarcane (18.07%). These results were expected because sugarcane, maize, and beans are the major crops planted in the study area. On the other hand, few farmers (4.82%) invested the borrowed funds in vegetable enterprises. This could be attributed to the culture in the study area, which considers vegetables as a ‘women’s enterprise.’ Off-farm enterprises that benefitted from the credit accessed by rural farm households included shops selling farm produce, welding, brick making, barbers/salons, motorbike service providers, and agrovets. A comparatively larger proportion (27.71%) of rural farm households invested the borrowed funds in buying and selling farm produce, followed by those engaged in selling clothes (8.43%). On the other hand, few (2.41%) farm households invested in welding.

### Determinants of rural farm household participation in the semi-formal credit program

Table 5 presents factors influencing rural farm household participation in the county government semi-formal credit program. The relationship between farming experience and participation in the county government credit program is positive and significant at a 5% level, implying that an increase in farming experience increased the probability of participation in the credit program by 1.58%. The possible explanation for this is that an increase in farming experience leads to increased productivity, increasing a farmers’ financial ability to repay credit. The findings of this study concur with Obisesan (2013), who reported that farming experience significantly and positively influenced household access to credit.

Occupation of the head of the household positively influenced household participation in the credit program at a 5% significance level, implying that off-farm employment increases the probability of participation in the program by 4.4%. Household managers engaging

**Table 5.** Factors influencing rural farm household participation in the semi-formal credit

Variable	Marginal effects	Std. Err.	z	P>z
Gender of household head	0.0479	0.0982	0.4900	0.6260
Age of household head	-0.0095	0.0068	-1.4000	0.1610
Education of household head	-0.0098	0.0158	-0.6200	0.5370
Farming experience	<b>0.0158</b>	<b>0.0064</b>	<b>2.4800</b>	<b>0.0130</b>
Household size	0.0181	0.0152	1.2000	0.2320
Occupation of household head	<b>0.0440</b>	<b>0.0194</b>	<b>2.2700</b>	<b>0.0230</b>
Marital status	0.0518	0.0695	0.7500	0.4560
Group membership	<b>0.2303</b>	<b>0.0826</b>	<b>2.7900</b>	<b>0.0050</b>
Distance to the nearest credit source	<b>0.0222</b>	<b>0.0135</b>	<b>1.6500</b>	<b>0.0990</b>
Distance to the nearest market	<b>0.0463</b>	<b>0.0228</b>	<b>2.0300</b>	<b>0.0420</b>
Access to financial training	<b>0.1815</b>	<b>0.0972</b>	<b>1.8700</b>	<b>0.0620</b>
Number of extension contacts	-0.0294	0.0182	-1.6100	0.1060
Farm size	-0.0213	0.0285	-0.7500	0.4540
Land ownership	0.0075	0.0685	0.1100	0.9120
Ownership of off-farm enterprise	0.1216	0.0978	1.2400	0.2140
Off-farm income	0.0823	0.0980	0.8400	0.4010

Number of obs =179  
 Prob. > chi2 =0.0002  
 Log likelihood = -101.3694

N =179

Source: own elaboration.

in farming, business, or any other form of employment in the public and private sectors were more likely to participate in the credit program than those who had retired. This is because individuals who earn regular income tend to be financially secure; hence they can afford to repay their loans. This study concurs with Sekyi (2017), who reported that occupation of the household manager had a positive influence on household credit use. Conversely, Gautam and Andersen (2016) argued that accessing employment in the private and public sectors enhanced household welfare, thus boosting their ability to borrow and repay loans.

The results indicate that group members had a positive influence on participation in the credit program at a 5% significance level, implying that being a member of a socioeconomic group increased the probability of

participation in the program by 23.03%. Membership in a socioeconomic group enabled individuals to access useful information and acted as a channel to access credit since many financial institutions prefer lending to groups. Similar findings were reported by Hananu et al. (2015), who argued that having membership in a social group was significant in determining household access to credit. The formation of socioeconomic groups helped an individual to benefit from a joint guarantee by group members.

Distance to credit source positively influenced participation in the credit program at a 5% significance level. An increase in distance to the credit source increased the probability of participation in the credit source by 2.22%. The possible explanation for these results is that farm households applied for credit at a group level, thus

reducing the transaction costs associated with an individual application. The results of this study were contrary to the findings of Kiplimo et al. (2015), who reported that distance to the credit source had a significant negative effect on household credit access. This implied that long distances to the credit source reduced the likelihood of rural households accessing it.

Furthermore, distance to the nearest market positively influenced participation in the credit program at a 10% significance level. An increase in distance to the nearest market increased the probability of participation in the credit program by 4.63%. The implication is that households located away from the nearest market engaged in farming activities that earned them more stable income than their counterparts, thus boosting their ability to borrow credit and repay it.

Finally, the relationship between access to financial training and participation in the credit program was positive and significant at a 10% level. As indicated in Table 5, access to financial training increased the probability of farm households participating in the credit program by 18.15%. In line with this, financial training enables farmers to gain new knowledge and skills, thus enhancing their management competencies. In addition, financial training enables farmers to develop proper plans and make informed decisions concerning credit use and return maximization. Similar findings were reported by Wadeya et al. (2020), who indicated that access to financial training significantly influenced credit use.

## CONCLUSION AND RECOMMENDATION

Based on the study, the semi-formal credit accessed by rural farm households in the study area was allocated to both on-farm and off-farm enterprises. The farm enterprises that benefited from the credit included dairy, poultry, beans, maize, sugarcane, vegetables, and tomatoes. On the other hand, off-farm enterprises included selling farm produce, welding, barbers/salons, brick making, motorbike service providers, agrovets, selling clothes, and Posho-mill. Conversely, factors such as farming experience, occupation of household manager, group membership, distance to credit source, distance to the nearest market, and access to financial training had a significant influence on rural farm household participation in the county credit program.

Based on the study results, there is a need for different stakeholders to offer financial training, thus equipping

farmers and entrepreneurs with the skills required for effective credit access and utilization. In addition, lending institutions need to consider bringing services closer to the farmers and entrepreneurs to reduce the transaction costs incurred in accessing loans. This can be done by hiring more credit officers to serve farmers and entrepreneurs in rural areas. Also, farmers and entrepreneurs should be encouraged to join socioeconomic groups to access credit from both semi-formal and formal lending institutions. Joining socioeconomic groups will enable them to access useful information concerning cheaper credit sources and better terms of credit access. As well as this, group members can act as guarantors for each other when applying for credit. Farmers should be encouraged to diversify their income by engaging in sustainable off-farm activities. This would enhance their financial stability and enable them to interact with more people, thus giving them access to useful information on credit access and utilization.

## REFERENCES

- Ahiawodzi, A.K., Adade, T.C. (2012). Access to credit and growth of small and medium scale enterprises in the Ho municipality of Ghana. *Brit. J. Econ. Fin. Manag. Sci.*, 6(2), 34–51.
- Alabi, O.O., Lawal, A.F., Chiogor, H.O. (2016). Access to formal credit facilities among Small-scale crop farmers' in Gwagwalada area council, Abuja, Nigeria. *Russ. J. Agric. Soc.-Econ. Sci.*, 49(1), 57–66.
- Alio, D., Okiror, J.J., Agea, J.G., Matsiko, F.B., Ekere, W. (2017). Institutional determinants of credit utilization in the savings and credit cooperatives in Soroti district, Uganda. *Afr. J. Rural Dev.*, 2(2), 175–182.
- Auma, D., Mensah, P. (2014). Determinants of Credit Access and Demand among Small-holder Farmers in Tigray Region, Ethiopia. Unpublished Master's Thesis. Norwegian University of Life Sciences, School of Economics and Business.
- Chandio, A.A., Jiang, Y., Wei, F., Rehman, A., Liu, D. (2017). Farmers' Access to Credit: Does Collateral Matter or Cash Flow Matter? – Evidence from Sindh, Pakistan. *Cogent Econ. Fin.*, 5(1), 383.
- Chepkwony, K., Bett, H., Sibiko, K.W. (2019). Determinants of Table Banking Loan Utilization among Micro Agri-Enterprises Owners in Bomet County, Kenya. *Int. J. Curr. Aspect.*, 3(2), 145–158.
- Chikwama, C. (2010). The Role of Rural Off-Farm Employment in Agricultural Development Among Farm

- Households in Low-Income Countries: Evidence from Zimbabwe. *Afr. J. Agric. Res. Econ.*, 4(1), 1–22.
- Conceição, P., Levine, S., Lipton, M., Warren-Rodríguez, A. (2016). Towards a secure food future: Ensuring food security for sustainable human development in Sub-Saharan Africa. *Food Pol.*, 60, 1–9.
- Dzadzze, P., Aidoo, R., Nurah, G.K. (2012). Factors determining access to formal credit in Ghana: A case study of smallholder farmers in the Abura-Asebu Kwamankese district of the central region of Ghana. *J. Dev. Agric. Econ.*, 4(14), 416–423.
- Francis, A., Nassar, A., Mehta, K. (2013). Are we formal yet? The evolving role of informal lending mechanisms to support entrepreneurship and poverty alleviation in central Kenya. *Int. J. Soc. Entrep. Inn.*, 2(2), 109. <https://doi.org/10.1504/ijsei.2013.054152>
- Gautam, Y., Andersen, P. (2016). Rural livelihood diversification and household well-being: Insights from Humla, Nepal. *J. Rural Stud.*, 44, 239–249.
- Hananu, B., Abdul-Hanan, A., Zakaria, H. (2015). Factors influencing agricultural credit demand in Northern Ghana. *Afr. J. Agric. Res.*, 10(7), 645–652.
- Johnen, C., Parlasca, M., Mußhoff, O. (2021). Promises and pitfalls of digital credit: Empirical evidence from Kenya. *PLOS ONE*, 16(7), e0255215. <https://doi.org/10.1371/journal.pone.0255215>
- Johnson, S. (2016). Competing visions of financial inclusion in Kenya: The rift revealed by mobile money transfer. *Canad. J. Dev. Stud./Rev. Canad. Détud. Dév.*, 37(1), 83–100.
- Johnson, S., Nino-Zarazua, M. (2011). Financial Access and Exclusion in Kenya and Uganda. *J. Dev. Stud.*, 47(3), 475–496. <https://doi.org/10.1080/00220388.2010.492857>
- Kiplimo, J.C., Ngenoh, E., Koech, W., Bett, J.K. (2015). Determinants of Access to Credit Financial Services by Smallholder Farmers in Kenya. *J. Dev. Agric. Econ.*, 7(9), 303–313.
- KNBS (Kenya National Bureau of Statistics). (2017). County Statistical Abstracts. Retrieved Feb 1<sup>st</sup> 2019 from: [www.Knbs.Or.Ke/County-Statistical-Abstracts/Page/2/?Wpdmc=County-Statistical-Abstracts](http://www.Knbs.Or.Ke/County-Statistical-Abstracts/Page/2/?Wpdmc=County-Statistical-Abstracts)
- Lind, D.A., Marchal, W.G., Wathen, S.A. (2019). Basic statistics for business and economics: 9th ed. In 103.7.177.7. Retrieved from: <http://103.7.177.7/handle/123456789/189691>
- Mukasa, A.N., Simpasa, A.M., Salami, A.O. (2017). Credit constraints and farm productivity: Micro-level evidence from smallholder farmers in Ethiopia. African Development Bank Group, Working Paper Series Number 247.
- Obisesan, A.A. (2013). Credit accessibility and poverty among smallholder cassava farming households in South West, Nigeria. *Green. J. Agric. Sci.*, 3(2), 120–127.
- Okwach, K. (2015). Over 9000 Entrepreneurs Set to Receive Kakamega County’s Sh125m Loan. *The Standard*. Retrieved July 13<sup>th</sup> 2019 from: <https://Www.Standardmedia.Co.Ke/Article/2000182358/Over-9000-Entrepreneurs-Set-To-Receive-Kakamega-County>
- Ouma, J.O. (2018). Innovation Strategy and Performance of Small and Medium Enterprises in Kenya—a Case Study of Kakamega County. Retrieved from: <http://erepository.uonbi.ac.ke/handle/11295/106070>
- Sekyi, S. (2017). Rural households’ credit access and loan amount in Wa Municipality, Ghana. *Int. J. Econ. Fin. Iss.*, 7(1), 506–514.
- Singh, N.R., Abate, M.T.Z. (2018). An assessment of financial sources of micro and small enterprises in North Shoa Zone Debre Berhan. *Acc. Fin. Manag. J.*, 3(07), 1602–1615.
- Verbeke, W., Ward, R.W., Viaene, J. (2000). Probit analysis of fresh meat consumption in Belgium: Exploring BSE and television communication impact. *Agribusiness*, 16(2), 215–234.
- Wadeya, L.O., Obel-Gor, C., Otiende, M.A. (2020). Determinants of credit access among smallholder dairy farmers in Kinangop sub-county, Kenya. *EPRA Int. J. Agric. Rural Econ. Res.*, 8(5), 1–10. <https://doi.org/10.36713/epra5808>
- Yamane, T. (1967). *Statistics, An Introductory Analysis* (2<sup>nd</sup> Ed.). New York, U.S.A.: Harper and Row.