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Navigating Crop Choice Dilemmas between Coffee and Avocado Farming among Smallholder Farmers in Murang'a County, Kenya

Abstract. This study explores the evolving crop preferences of smallholder farmers in Murang'a County in Kenya, who transitioned from coffee farming to avocado cultivation largely due to prolonged poor prices of coffee. Avocado farming, though initially was very promising, has encountered significant challenges including exploitation of farmers by brokers, price volatility and little support by cooperatives. With the recent surge in global coffee prices, smallholder farmers face uncertainty about whether to continue with avocados or to revert to coffee. The general objective of this study was to explore farmers' perceptions on which direction they should take in the choice between coffee and avocados cultivation. Based on data collected from 116 smallholder farmers in Murang'a County, the researcher examined factors that influenced choice between the two crops. The paper was guided by the Sustainable Livelihoods Framework (SLF) and the Rational Choice Theory (RTC). The study found that crop profitability had a strong influence on farmers' crop choice decisions. Profitability drove the initial shift from coffee to avocados and shaped the current reconsideration of coffee farming following the recent global price increases. Market price volatility increased uncertainty instead of guiding clear crop choices, leading farmers to favour diversification over full commitment to either coffee or avocados. Institutional support and access to farming inputs affected farmers' willingness to return to coffee. Weak cooperatives and limited extension services discouraged a complete return to coffee despite the recent improved prices. The study concluded that farmers' crop choice decisions in Murang'a County were shaped by a complex interaction of economic incentives and institutional conditions than by price alone. The study recommends strengthening cooperative support, supporting and encouraging crop diversification, improving access to farming inputs and providing market guidance to help smallholder farmers make informed and sustainable crop choices.

Keywords: avocado cultivation, coffee farming, crop choice, diversification, price volatility, smallholder farmers

JEL Classification: Q12, Q13, O13

Introduction

For decades, coffee has occupied a central role in Kenya's agricultural economy, emerging as one of the country's most valuable export commodities in the country. Murang'a County government recognises agriculture as the backbone of the County's economy and for this reason it targets to modernise production and market accessibility of its farm produce (Murang'a County Government, 2025). Coffee farming, introduced during the colonial period, became a cornerstone of smallholder livelihoods, especially in central highland regions like Murang'a, in the 1970s and 1980s (Chelangat 2019, Karanja 2002). Kenyan coffee which is renowned for its high quality, has always enjoyed strong international demand and premium prices. In the coffee growing regions, cooperative societies were formed to support smallholder production. The rural economies in the coffee growing zones for a long time revolved around the tempos of the coffee harvest. The crop not only served

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as a critical source of income for many rural households but also greatly contributed to community investments in education, health, and infrastructure, particularly the rural feeder roads. However, insufficient support to coffee farmers in Kenya has led to a sharp decline in coffee production. Export volumes and revenue have been reported to be on a downward trajectory in recent decades due to policy mismatch and insufficient government support to farmers. In particular, depressing performance of coffee production is due to poor coffee prices, poor marketing channels, coffee financing, coffee regulations, cost of production, and poor management of cooperatives (Wanzala et al, 2022).

Murang'a County, situated in Kenya's central region, has historically stood out as a leading coffee-producing area. Its high-altitude terrain, rich volcanic soils, and favourable rainfall patterns made it ideal for growing Arabica coffee. Over generations, families in Murang'a invested heavily in coffee, viewing it as a long-term economic venture and cultural heritage. Coffee societies were once powerful institutions, controlling marketing, milling, and export logistics, while also providing a social safety net for members. However, this dominance has been significantly eroded over the past three decades.

The global coffee sector has undergone significant structural changes, and Kenyan farmers have felt the shockwaves. From the 1990s onwards, international coffee prices became increasingly volatile, and Kenyan smallholders faced falling returns for their produce (Wanzala and Obokoh, 2025). Deregulation of the sector, mismanagement within cooperative societies, delayed payments, and lack of transparency led to widespread disillusionment among the farmers. For many farmers in Central Kenya, coffee ceased to be economically viable. As frustration mounted, farmers began to uproot their coffee bushes in favour of more promising alternatives such as avocados and macadamia. The avocado is currently presented as a 'globalised fruit' that promises substantial profits, rents or incomes, promoted by a variety of private and public actors, and also as a 'superfood' due to its nutritional qualities (Racaud, 2025).

Against this backdrop of decline and uncertainty about coffee, avocados emerged as an increasingly attractive alternative for smallholder farmers in Kenya. In recent years, avocado farming, particularly the Hass variety, has become one of the most attractive alternatives to coffee (Kariuki, 2025). Encouraged by rising global demand, higher profits support from the private actors, and nutritional trends, smallholder farmers in central Kenya have rapidly shifted towards avocado cultivation (Graduate Farmer, 2025). Export companies, agronomists, and local leaders have promoted avocados as the "green gold" of the future, promising better incomes, fewer bureaucratic hurdles, and access to dynamic markets in Europe, the Middle East and in China. Unlike coffee which is produced solely for export, avocados are also consumed locally and they have many benefits. It is believed that there are many health benefits of avocados. For instance, phenolics found in avocado peels and seeds have antioxidant, anti-inflammatory and antimicrobial properties with many health benefits. The by-products of avocados contain high-value functional properties that are beneficial to human health, pharmaceutical and food industry, but they remain underutilised (Nyakang'i et al, 2023). Avocado seeds and peels are currently being used traditionally in the production of soaps, pharmaceuticals, and food products, including beverage products. Smallholder avocado farmers in the East African region have benefitted from marketing outlets that promise export standards, improved seedlings, and cooperative linkages (Kariuki, 2025; Kingu and Kinyondo, 2024). The comparative ease of management and lower labour requirements have further made avocados appealing, especially for the ageing farmers.

For many years prior to the recent increase in global coffee prices, farmers had experienced prolonged periods of poor and unstable coffee prices. Yet, since 2024 just as many farmers were ready to replace coffee farming with seemingly 'better alternatives' such as avocado cultivation, recent developments have brought new complexity to the picture. Global coffee prices have shown signs of recovery (Bermudez, et al 2022; Massrie, 2025). The Kenyan government has launched renewed efforts to revitalise the coffee sector through reforms, smallholder farmers' education and direct market access for the bigger farmers. Prices paid to farmers have risen in many regions, with some factories reporting substantially higher per-kilo payments, making coffee again seem viable. But many farmers remain uncertain whether this rebound is sustainable, given previous cycles of boom and bust. The coffee producing regions of central Kenya such as Kiambu, Nyeri, Kirinyaga and Murang'a County have found themselves at crossroads. Farmers face a difficult decision: to double down on the avocado boom or to reinvest in coffee, hoping the rebound is sustainable. The result is a palpable sense of uncertainty and hesitation among farmers, many of whom now straddle both crops while awaiting clearer signals from the market and policy environment. The recent increase in global coffee prices has made farmers to reconsider coffee farming. This has created new crop choice dilemmas among the smallholder farmers in Kenya.

This paper seeks to explore the critical dilemma facing smallholder farmers in Murang'a: which direction should the smallholder farmers in Murang'a take, continue with avocados, return to coffee, or pursue a mixed approach? While avocados often yield higher short-term returns per unit land and involve lower minimum technical requirements (for certain varieties), coffee still holds attraction for farmers willing to invest in quality, who have access to reliable cooperatives, and who target specialty or export niches. Smallholder coffee farmers, however, face numerous social barriers, from education to access to knowledge networks to support implementation (Jones et al, 2025). This paper unpacks the competing incentives, risks, and trade-offs that farmers consider as they navigate this crop choice decision. It also examines how broader global and local trends are influencing the shifting dynamics between traditional and emerging cash crops in Kenya.

Globally, both coffee and avocados are shaped by complex supply chains and market forces. Coffee continues to be a staple of international commodity trade, but it remains susceptible to price shocks, climate variability, and geopolitical tensions (Wanzala and Obokoh, 2025). Meanwhile, the avocado market has seen exponential growth, driven by rising health consciousness and lifestyle shifts in consumer markets. However, avocado exports face challenges related to quality standards, oversupply risks, water use concerns, and occasional export bans. Locally, while some farmers have realised quick gains from avocado sales, others have encountered losses due to poor post-harvest handling, fluctuating buyer demand, and limited farmers' bargaining power, quality concerns, and limited access to high-value export markets (Kariuki, 2025).

Several recent studies have sought to assess the economic viability of avocados under Kenyan conditions (Amare et al 2019; Kwizerimana et al, 2023; Kingu and Kinyondo, 2024). Analyses comparing input costs, yield potential, labour demands, and market accessibility suggest that avocados may offer higher short-term profitability than coffee, especially in well-managed systems, but coffee farming still remains more profitable than avocado farming (Graduate Farmer, 2025). However, coffee retains its potential as a high-value crop, particularly if value chain reforms and specialty market access are sustained. This makes the choice less straightforward than it might initially appear. Considering these complexities, this

paper argues that the decision between coffee and avocados is not merely a technical or economic one. It is deeply embedded in historical experiences, institutional legacies, shifting market dynamics, and personal risk assessments. By focusing on Murang'a as a case study, the paper aims to contribute to a broader understanding of how smallholder farmers in Kenya are navigating a rapidly changing agricultural landscape.

Statement of Purpose

The aim of this study was to examine the factors influencing smallholder farmers' decision to either return to coffee farming, remain in avocado production, or adopt a diversification strategy, in the context of the recent rise in coffee prices and challenges in avocado farming.

Objectives of the Study

The general objective of this study was to analyse the determinants of crop choice among smallholder farmers transitioning between coffee and avocado farming in Murang'a County, Kenya. The specific objectives were to:

1. Assess the influence of previous crop profitability on farmers' crop choice decisions regarding coffee and avocado farming.
2. Examine the role of market price trends in shaping farmers' crop choice decisions.
3. Determine how access to farming inputs affect farmers' crop choice decisions.
4. Evaluate how institutional support and trust affect farmers' crop choice decisions.

Theoretical Framework

This study adopted a dual theory approach integrating the Rational Choice Theory (RCT) and the Sustainable Livelihoods Framework (SLF). These two theories offer complementary perspectives on the choice between coffee and avocado farming among the smallholder farmers.

Rational Choice Theory (RCT)

The RCT has its roots in the work of classical thinkers such as Adam Smith (2005) and Jeremy Bentham (1789), and later Max Weber (1978) through his emphasis on purposive, means-ends social action. The theory posits that individuals are rational actors who make decisions based on available information by comparing the costs and the benefits of different options. In contemporary agricultural studies, the theory has been applied by scholars such as Gary Becker (1976), Jon Elster (1986) and James Coleman (1990) to explain economic behaviour, institutional decision-making and farmer responses to market incentives.

The RCT explains the initial shift from coffee to avocado farming in Murang'a as a rational response to sustained low coffee prices, unreliable payments and declining trust in the coffee cooperatives. Avocado farming, on the other hand, offered higher perceived returns making it the more utility-maximising option. The recent increases in coffee prices have altered these calculations, prompting farmers to reassess their choices. However, lingering risks, price volatility and institutional failures constrain a full return to coffee farming. This has made farmers to adopt cautious strategies such as partial reversion to coffee or crop diversification rather than wholesale change. Thus, according to this theory, smallholder farmers in Murang'a evaluated factors such as the expected returns from coffee

and avocados, market stability, input costs, and time to maturity (gestation period) before making planting decisions.

Sustainable Livelihoods Framework (SLF)

The SLF has its roots in the work of Amartya Sen (1981) and was later systematised by Robert Chambers and Gordon Conway (1991) and operationalised by the UK Department for International Development (DFID, 1999). It has been applied in studies such as that by Gudyani et al (2025). The SLF posits that households pursue livelihood strategies based on their access to five forms of capital, namely, human, natural, financial, physical, and social. These forms of capital are shaped by vulnerability (shocks, trends, and seasonality), institutions, and policies. Livelihoods decisions are therefore not driven by income alone, but by the need to sustain and protect assets, reduce risk, and enhance long-term resilience.

The initial shift from coffee to avocado farming in Murang'a County can be understood as a livelihood adaptation to declining financial returns from coffee and increased vulnerability of the farmers. Farmers reallocated land (natural capital) and labour (human capital) towards avocado farming, which promised quicker income flows and improved financial capital. The recent increase in coffee prices has altered the vulnerability and incentive context prompting farmers to reassess coffee as part of their livelihood portfolio. However, past institutional failures, market uncertainty and input constraints have made the smallholder farmers to diversify than to fully return to coffee farming. This reflects the SLF's emphasis on resilience and sustainability than short-term profit maximisation.

In this study, while the RCT explains the immediate economic calculations guiding farmers' crop choices, the SLF situates these choices within broader livelihood assets, risks, and institutional contexts. The RCT and SLF together show that farmers' decisions are not driven by price incentives alone but are shaped by the need to balance short-term economic gains with long-term livelihood security and resilience.

Conceptual Framework

The conceptual framework shows the interaction between market prices input availability, farmer perception, institutional support and the final decision of the farmers to choose either avocado cultivation or coffee farming. Independent variables are the previous crop profitability, the market price trends, access to farm inputs and institutional support which include agricultural extension services and cooperative performance, the intervening variables perception of the risk of growing either coffee or avocados, the house resource availability which include the land size and availability of family labour, and the support accorded by the government to the coffee and avocado farmers. The dependent variable is the farmer's current crop preference to either grow coffee or avocados or diversify into both crops.

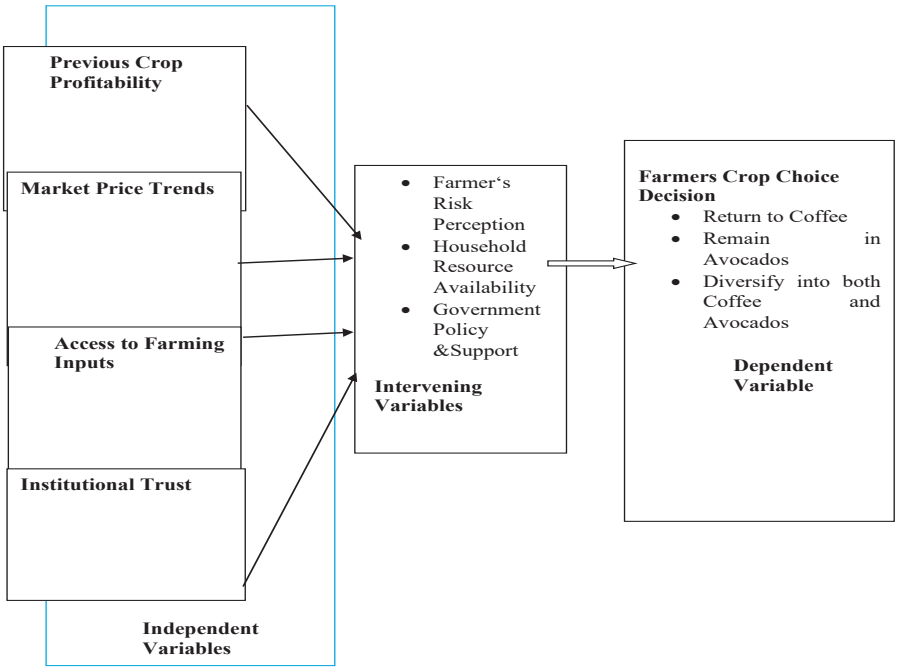

Fig. 1. Conceptual Framework Showing Factors Influencing Farmers' Crop Choice Decisions

Source: Author's own work.

Study Area and Methodology

Study area

This study was conducted in Murang'a County, located in the central region of Kenya, approximately 85 kilometers north of Nairobi. The County lies within the fertile highlands between the Aberdare Ranges and Mount Kenya, making it one of the country's most productive agricultural zones. Murang'a spans an area of about 2,558 square kilometres and is characterised by a mix of high-altitude terrain, well-drained volcanic soils, and a bimodal rainfall pattern that supports the cultivation of perennial crops. The average annual rainfall ranges from 1,000 to 1,500 mm, with temperatures averaging between 14°C and 28°C, conditions ideal for both coffee and avocado farming. According to the 2019 Kenya Population and Housing Census, the County had a population of 1,056,640 (KNBS, 2020). With a population growth rate of 1.2%, the County's population is projected to reach approximately 1,135,521 in 2025 (County Government of Murang'a, 2023). The population is projected to reach 1,149,196 in 2026; 1,163,103 in 2027 and 1,177,144 persons in 2028 (Murang'a County Government, 2025). By the end of 2025, the population density of the

County was estimated to be 444 persons per square km and is projected to grow to 460 persons per square km by the year 2026.

Administratively, the County is divided into several sub-counties, including Kangema, Kigumo, Mathioya, Kandara, and Gatanga. These regions have historically been strongholds of smallholder coffee production. The County has recently emerged as a leading producer of avocados. Many farmers continue to engage in farming of both coffee and avocados though given the small land sizes, they have to decide about which crop to devote a larger section of their land to depending on the economic returns. This study was carried out in Kigumo and Kangema sub-counties. These two were purposively selected because they represent Murang'a County's transitional farming zones where coffee and avocado farming co-exist. This allowed an in-depth examination of farmers who have shifted, retained or diversified between the two crops in response to the changing market conditions.

Methodology

The study used a mixed-methods research design utilising both quantitative and qualitative techniques. By integrating quantitative and qualitative methodologies, the researcher was able to understand the complexity of choices farmers had to make between coffee and avocado farming.

Target Population and Sampling

The target population for this study comprised smallholder farmers in Murang'a County who had transitioned from coffee to avocado farming either fully or partially. Hence, they provided insights into the drivers and constraints associated with the choice between the two crops. A sample of 116 smallholder farmers was selected using purposive sampling technique.

Data Collection Methods

Primary data for this study were collected in the months of November and December 2025. First, the study used a survey method whereby a questionnaire was administered to the 116 sampled smallholder farmers. Second, Key Informant Interviews (KIIs) were conducted with 11 participants who included two agricultural extension officers in the County government of Murang'a, two area chiefs, two leaders of cooperatives, two buyers of avocados and three village elders. In addition, to complement the primary data, secondary data were obtained through a review of County reports, policy documents, County Development Plans (CDPs) and published articles. The combination of these methods allowed for triangulation of the research findings and a deeper understanding of the factors that influenced choice between coffee and avocado farming in the County.

Measurement of Variables

The dependent variable was the farmers' crop choice decision. It was measured as a binary outcome. It was coded as 1 if the farmer intended to revert to coffee. It was coded as 0 if the farmer intended to continue with avocado farming. The previous crop profitability was measured using the farmers reported annual earnings (in shillings) from their preferred crop. Market price trends were measured using the farmers' perceptions of price stability and market performance. A Likert scale ranging from 1 (very unstable) to 5 (very stable) was used. Farmers' access to agricultural inputs was measured based on their ability to obtain farm related inputs such as fertilisers, agrochemicals and seedlings. It was coded as 1 if the

farmers had adequate access and 0 if there was inadequate access to the required inputs. Institutional support and trust were measured using the Likert scale depending on farmers' level of confidence in agricultural extension services and cooperatives.

Descriptive Statistics of Study Variables

Table 1 presents the descriptive statistics of the study variables. It includes the units of measurement, the maximum and minimum values, means and standard deviations.

Table 1. Descriptive Statistics of Study Variables (N = 116)

Variable	Unit of Measurement	Minimum	Maximum	Mean	Standard Deviation
Previous Crop profit	Ksh per year	41,000	720,000	169,400	111,340
Market Price Trends	Likert Scale (1=Very unstable, 5=Very stable)	1	5	3.16	1.01
Access to Agricultural Inputs	Binary (0=Adequate, 1=Inadequate)	0	1	0.46	0.50
Institutional Support and Trust	Likert Scale (1=very low confidence, 5=Very high confidence	1	5	2.84	1.11
Land Size	Acres	0.50	5	1.79	1.06
Annual income	Ksh per year	71,000	840,000	229,215	122,450
Age of the Farmer	Years	24	81	50.40	12.40

Source: survey data.

As shown in Table 1, there was a considerable variation in crop profitability and household income among the smallholder farmers in Murang'a. Farmers reported moderate perceptions of market stability. They also reported low confidence in institutions. In this study, the variability across the variables necessitated the use of binary logistic regression to examine factors that influenced crop choice decisions among the farmers.

Data Analysis and Presentation

Data collected from the 116 smallholder farmers were coded, cleaned and analysed using the Statistical Package for the Social Sciences (SPSS) version XX. Quantitative data were analysed using statistics such as frequencies and percentages. An inferential analysis was conducted using binary logistic regression to examine the influence of crop profitability, market price trends, access to farming inputs, and institutional support and trust on farmers' crop choice decisions. A binary logistic regression model was used because the dependent variable (farmers' crop choice decision) was dichotomous, coded as 1 for farmers intending to revert to coffee farming and 0 for those continuing with avocado farming. Regression results were presented in tabular form, reporting regression coefficients (β) standard errors,

odds ratios (Exp β), and p-values. Statistical significance was assessed at the 5 percent ($p<0.05$) level. Model fitness was evaluated using the -2 Log Likelihood, Cox and Snell R2, and Nagelkerke R2 statistics. Qualitative data were analysed thematically according to the specific objectives of the study. KIIs and review of secondary data were used to augment the information from the smallholder farmers. Findings were discussed according to the study objectives and interpreted through the lenses of the RCT and the SLF.

Results and Discussion

Table 2 presents the background characteristics of the 116 smallholder farmers interviewed in this study. Majority (74.1%) of the farmers were male reflecting prevailing gender patterns in land ownership and cash crop production in the County. Most farmers comprising 69% were aged between 35-64 years, an indicator that crop choice decisions were largely made by economically active household heads. In terms of education, majority (81.1%) of the farmers had attained primary or secondary school education, while only 3.4% had no formal education. This means that farmers had adequate literacy levels for engaging with agricultural information, crop choices and markets. Most respondents (41.4%) owned between one and two acres of land confirming the dominance of smallholder farming systems. Household incomes levels were modest with 59.5% earning below Ksh 200,000 annually.

Table 2. Background Characteristics of the Smallholder Farmers in Murang'a County (N= 116)

Demographic Characteristic	Category	Frequency	Percentage (%)
Gender	Male	86	74.1
	Female	30	25.9
Age (Years)	Below 35	18	15.5
	35-49	42	36.2
	50-64	38	32.8
	65 and Above	18	15.5
Education Level	No Formal Education	4	3.4
	Primary Education	46	39.7
	Secondary Education	48	41.4
	Tertiary Education	18	15.5
Land Size (Acres)	Less than 1 Acre	34	29.3
	1-2 Acres	48	41.4
	Above 2 Acres	34	39.3
Main Source of Income	Farming Only	82	70.7
	Farming and off-farm Activities	34	29.3
Estimated Household Annual Income (Ksh)	Below 200,000	69	59.5
	200,000-500,000	30	25.9
	Above 500,000	17	14.6
Access to Extension Services	Yes	54	46.6
	No	62	53.4
Membership in a Cooperative Society	Yes	68	58.6
	No	48	41.4

Source: survey data.

This underscores the economic vulnerability of farming households in Murang'a County. Farming constituted the main source of income for all the respondents either solely or in combination with off-farm activities. While 58.6% of the farmers reported membership in cooperatives, access to extension services remained limited with 53.4% indicating that they did not have regular contacts with agricultural extension officers, an important factor that influenced farmers' ability to make crop choice decisions. Since farmers lacked regular contacts with agricultural officers, they did not have access to farm advisory services which is a major driver of innovation in agriculture (Laurent et al, 2022). Since agriculture is a devolved function in Kenya, this calls for the need to strengthen agricultural extension services by the Murang'a County government as a way of improving the ability of the farmers to make informed decisions.

Overview of Smallholder Farmers' Crop Choice Decisions

Out of the 116 farmers interviewed, 47.4% indicated an intention to return to coffee farming, while 52.6% preferred to continue cultivating avocados as their primary cash crop. This distribution reflects the uncertainty created by recent coffee price increases alongside persistent challenges in avocado farming (Kariuki, 2025). When the prices of coffee deteriorated, many coffee farmers switched to avocado farming without uprooting coffee. This clearly supports the view that farmers' crop decision making was influenced by market volatility. It is believed that coffee has double the income of Hass avocados, with consistent yearly returns once the trees mature (Graduate Farmer, 2025). However, coffee farming in Kenya had declined due to mismanagement, low farmer pays, and inefficiencies. However, recent government interventions are reversing the trend through debt waivers, cherry advance fund, a revamped Nairobi coffee exchange, direct marketing licenses, and coffee research and training (Graduate Farmer, 2025).

To examine the factors that influenced farmers' crop choice decisions in Murang'a County, the researcher employed a quantitative analytical approach based on a crop choice decision model. The dependent variable was farmers' crop choice decision which was operationalised as the current production decision regarding coffee, avocados or a combination of the two crops. The independent variables were previous crop profitability, market price trends, access to farming inputs, and institutional support and trust.

The empirical mode was specified as follows:

$$Y=\beta0+\beta1X1+\beta2X2+\beta3X3+\beta4X4+\varepsilon$$

Where:
Y – farmers' crop choice decisions,
β0 – constant term,
X1 – previous crop profitability,
X2 – market price trends,
X3 – access to farming inputs,
X4 – institutional support and trust,
ε – error term.

Table 3. Binary Logistic Regression Results for Farmers' Crop Choice Decisions (N=116)

Variable	B	S.E	Wald	Odds Ratio(Exp(B))	Sig. (p-value)
Previous Crop Profitability	0.842	0.312	7.27	2.32	0.007**
Market Price Trends	0.516	0.241	4.57	1.68	0.033*
Access to Farming Inputs	0.903	0.417	4.69	2.47	0.030*
Institutional Support and Trust	0.781	0.295	7.01	2.18	0.008*
Age	-0.018	0.014	1.65	0.98	0.199
Education Level	0.263	0.187	1.98	1.30	0.159
Land Size	0.344	0.152	5.10	1.41	0.024*
Cooperative Membership	0.629	0.308	4.16	1.88	0.041*
Access to Extension Services	0.571	0.286	3.99	1.77	0.046*
Constant	-3.214	1.102	8.49	-	0.004

Source: Author's own calculations.

Model diagnostics:
-2 log likelihood=124.6
Hosmer-lemeshow test:X2 =6.18, p=0.63
Nagelkerke R^2 =0.41
*p<0.05; *p<0.01

Table 3 presents the results of the binary regression analysis examining the factors that influenced farmers' crop choice decisions. The regression results indicate that previous crop profitability had a positive and statistically significant effect on farmers' crop choice decisions (OR=2.32). This suggests that farmers who experienced higher returns from coffee in the past were more than twice as likely to consider returning to coffee farming. Market price trends were also significant (OR=1.68, p<0.05), implying that perceptions of improved and stable coffee prices increased the likelihood of re-adoption.

Access to farming inputs significantly influenced crop choice (OR=2.47,p<0.05), indicating that farmers with adequate access to inputs were more likely to return to coffee farming. Similarly, institutional support and trust emerged as a strong predictor (OR=2.18,p<0.01) underscoring the importance of cooperatives and supportive institutions in shaping farmers' decisions.

Among the control variables, land size, cooperative membership and access to extension services were statistically significant. Age and education level were not statistically significant. The model demonstrated good fit, as indicated by a non-significant Hosmer-Lemeshow test and a Nagelkerke R^2 of 0.41, suggesting that the included variables explain a substantial proportion of variation in farmers' crop choice decisions.

Overall, the regression results support the study's theoretical argument that farmers' decisions were influenced by economic rationality and institutional conditions rather than price changes alone.

Influence of Crop Profitability on Farmers' Crop Choice Decisions Regarding Coffee or Avocados

The findings reveal that previous crop profitability was the strongest determinant of farmers' crop choice decisions. One of the farmers in Kigumo Sub-county who had planted avocados on one acre and coffee on half an acre had this to say:

When coffee prices were very low, I found it very difficult to educate my children because I have several of them. I decided like other farmers in this area to plant avocado trees. I cannot regret they have been giving me better returns than coffee until very recently. But coffee now is not bad only that it is more demanding to farm coffee than avocado trees".

Findings from the KI interviews support the finding that profitability was the driver of the crop choice among the farmers. A key informant who was an official of a coffee cooperative in Kangema Sub-county had this to say:

"In this area farmers were frustrated with coffee farming for many years. After deducting costs of labour for harvesting, pruning, tilling land, fertilisers and chemicals for spraying, farmers had very low incomes. This made many farmers to either uproot or neglect coffee and planted avocados instead".

Another key informant who was an assistant chief and an avocado farmer supported the growing of avocados because the crop had higher profit, and was therefore cautious about switching to coffee as he said:

"When we realised that avocados had better money, we abandoned coffee. But now that coffee has improved, we are considering going back to coffee, but we are careful because we have really suffered because of growing coffee for many years"

The findings of this study support the core assumption of the RCT that individuals act to maximise expected economic benefits. Prolonged low returns from coffee farming reduced its perceived utility, prompting farmers to rationally shift to avocado farming which promised higher income. The renewed interest in coffee farming following recent price increases reflects a recalibration of expected returns rather than an emotional or habitual attachment to coffee. From a SLF perspective, profitability directly affected financial capital. This explains why the smallholder farmers in Murang'a County prioritised income stability and the ability to meet household needs. Crop choice among smallholders was strongly shaped by farmers' past experiences of profitability. In making a choice between the two crops, a farmer who had largely shifted to avocado farming had this to say:

"I cannot eat coffee unlike avocados which my children eat with other foods like rice and githeri. When I take avocados to the nearest market I come back with money. For coffee, we have to take it to the factory, or it is bought by brokers who insist that we harvest it for them. Avocado buyers harvest the fruits themselves and then we count with them to know the money they will pay me".

This study indicated that smallholder farmers were ready and willing to switch to the crop that was more profitable. The decline in farmers' income due to low coffee prices and high costs of inputs reduced profitability and this encouraged farmers to farm other crops especially avocados. However, having earned good returns from coffee in the past, they were hesitant to abandon it completely even when avocado farming was more attractive. Recent resurge in coffee earnings however reinforced the commitment to coffee farming among the

smallholder farmers in Murang'a County. The findings of this study contradict agricultural studies that have shown that although profit maximisation is important, farmers do not always prioritise profitability when choosing the crops to grow but instead balanced profit maximisation with environmental factors, farm characteristics, social and personal concerns (Ngeno, 2024). The findings of this study also contradict the arguments by Groeger & Zylberberg (2025) who contend that farmers in developing countries do not grow high-return crops due to clustered social networks that restrict diffusion of new technologies.

The findings of this study are, however, concurrent with other studies that have established that farmers switched to crops such as avocados and macadamia because earnings were more reliable, faster and more certain than from coffee (Rockle et al, 2019; Kariuki, 2025). The findings also concur with those of Boniphace et al (2023) who found that in Tanzania farmers had positive perceptions about effects of avocado farming on livelihoods and biodiversity. Hence, smallholder farmers viewed avocado farming as most profitable compared to other crops. Similar findings that farmers were driven by profit have been reported in Rwanda where farmers preferred avocado farming because it was economically more profitable than all other crops (Ntabakirabose et al, 2021). Recent studies by Yigezu et al (2026) on carrot farming among smallholder farmers in Ethiopia have equally found that profitability was positively and significantly important in crop choices and was influenced by yield and market price. Hence, we can argue that past coffee profitability kept farmers in Murang'a County cultivating the crop and it also acted as a benchmark that avocado earnings had to meet for farmers to switch crops. Farmers only switched to avocado farming when they felt that coffee was not as profitable as expected or when avocado profitability was higher.

Role of Market Price Trends in Shaping Farmers' Crop Choice Decisions

The sampled farmers were asked whether prices of coffee and avocados influenced their decision to grow coffee or avocados. Data analysis shows that Market price trends significantly influenced farmers' crop choices, though not in a linear manner. Market price trends were also significant (OR=1.68, $p<0.05$), implying that perceptions of better and more stable coffee prices increased the likelihood of re-adoption. While rising coffee prices increased the likelihood of reconsidering coffee, persistent price volatility in both coffee and avocado markets generated uncertainty. This finding is supported by a key informant who reported that:

"Farmers here are very sensitive to price changes. Farmers do not have confidence in coffee farming because of its low prices for many years. Although the prices have improved farmers are not sure if it will last or it is only manipulated for political reasons because as we approach elections farmers have to be made happy so that they vote for the current government in the 2027 elections. Avocado farming is better, but it has challenges because of changes in the export requirements and demand".

This study finding is in concurrence with the findings of Wanzala and Obokoh (2025) who found that price dynamics and volatility in coffee affected Kenya's competitiveness in the global coffee industry, highlighting the need to protect farmers from low coffee prices. These researchers make argument for market stabilisation strategies, including hedging tools, improved market access, and stable exchange rates, to protect producers from adverse price movements. It has been observed by Massrie (2025) that the global coffee market has

experienced "significant price volatility in recent years, with rising prices influenced by multiple factors, including climate change, supply chain disruptions, increased production costs, and growing demand".

Price volatility in Murang'a County made many farmers to avoid full specialisation. This finding aligns with the RCT's recognition of decision-making under uncertainty where actors may adopt risk-averse strategies. The SLF further explains the behaviour by highlighting farmers' exposure to vulnerability contexts, including fluctuation of prices and unreliable markets. This vulnerability encouraged farmers to adopt diversification as a coping strategy for livelihood resilience rather than exclusive dependence on a single cash crop. Hence, this study found that market price trends of both coffee and avocados (both recent and anticipated) were crucial in shaping farmers' expectations and hence the crop choice. For instance, as for coffee price, a farmer had this to say:

"How do you take your crop to the factory and you don't know you are selling at what price, yet you have grown it and harvested it at your own cost and using your own and my family's labour. That is modern slavery. I can never go back to coffee farming".

Farmers in Murang'a County were aware that historically coffee experienced volatile international markets and price fluctuations which made them economically vulnerable. On the other hand, they thought that although avocados also faced price variations, they were more stable and could earn the farmer money immediately than coffee which took a long time before farmers were paid. Therefore, generally the market price trends of coffee and avocados in Murang'a County acted as a strong force that attracted the smallholder farmers towards the crop that had better prices and reliable income. These expectations in turn affected farmers' decision on whether to grow coffee, switch to avocados or to grow both crops.

Effect of Access to Farming Inputs on Farmers' Crop Choice Decisions

Farmers were asked to compare the access and affordability of farming inputs of coffee and avocados and whether the inputs had an influence on the crop they chose to grow. As shown in Table 3, access to farming inputs emerged as a significant factor shaping crop choice decisions. This implies that even where farmers wanted to make rational economic decisions, they were constrained by practical resource availability. One of the farmers pointed out that:

"I would want to grow coffee because it has higher returns, but coffee is for rich people who can afford manure, expensive pesticides, agrochemicals and high labour costs during pruning and harvesting. Avocados are much cheaper for me to grow at my age. I did not buy seedlings. I simply planted the seed and then paid Ksh 50 for grafting into Hass variety. For avocados, I don't apply any chemical and buyers harvest without charging me any money for it".

On farming inputs, a key informant who in Kangema Sub-county confirmed that coffee required more capital inputs than avocados:

"Coffee requires more inputs like fertilisers and agrochemicals than avocados. It also requires constant application of organic manure. You need to have dairy farming to keep your coffee farm fertile. Most farmers cannot afford the inputs and labour required in coffee farming. Avocados are attractive to the smallholder farmer because once trees have matured the farmers' work is only to till the land. Unfortunately, there are many avocados' thieves. Most farmers cannot be able to return fully to farming of quality coffee as it was in the past due to high costs of inputs".

Thus, even when coffee prices improved, farmers lacking access to fertilisers and pesticides were less likely to return to coffee farming. This finding concurs with the RCT which assumes that choices are made within existing constraints. According to the SLF, access to inputs represents physical and financial capital without which livelihood strategies cannot be effectively pursued. Limited access to agricultural inputs restricted the smallholder farmers' ability to respond to favourable markets signals. In addition, rising cost of inputs such as fertilisers and labour, put more pressure on coffee producers (Massrie, 2025). Farmers in Murang'a County reported that compared to avocados, coffee required more regular inputs for pruning, disease control, fertiliser, and labour. Generally, smallholder farmers struggled to get these inputs due to their high costs which ate into their income. Moreover, smallholder farmers did not have access to credit facilities to enable them buy inputs. Although some coffee farmers sometimes accessed fertilisers through coffee cooperatives, the supply was not guaranteed and sometimes came too late. If the inputs were cheaper, and available on credit, it would make farmers more attracted to the crop. Coffee farmers in Murang'a reported that in the past cooperatives supported them through cheaper inputs but that support had disappeared and this negatively affected coffee farming. In contrast, some avocado producers reported that they benefitted from seedling supply and better market linkages. One way of reducing costs of inputs will be to encourage and educate smallholder farmers on the importance of embracing use of organic manure. As it has been pointed out by Jones et al (2025), "volatile prices, climate change, rising input costs, and pressure to decrease carbon footprints represent key challenges for farmers. Regenerative soil management and the use of organic management as an alternative to conventional mineral fertilisers offer one potential solution to address these challenges".

Influence of Institutional Support and Trust on Farmers' Crop Choice Decisions

The fourth objective of this study was to evaluate how institutional support and trust affected farmers' crop choice decisions. The finding was that institutional support and trust significantly affected farmers' willingness to return to coffee farming. For instance, a farmer in Kangema who had totally abandoned his coffee trees for many years said:
"I lost trust in our coffee cooperative when payments were delayed for a long time. They twice refused to pay for the coffee we delivered as they said that the coffee was stolen in the factory. Even when they paid, the payment was very low that it was difficult for me to pay the workers. At my age, I cannot try to go back to coffee farming. When I had young children, they assisted a lot in providing labour but they have now migrated into different towns. Without support by our coffee cooperative like they used to give us fertiliser and spraying chemicals in the past, most of us in this area cannot afford to back to coffee farming".

This study underscores the central role that institutions played in shaping agricultural decision-making among the smallholder farmers. A conducive institutional environment fosters the ability of entrepreneurs to discover business opportunities. Access to credit and farming implements offers financial freedom for farmers who are entrepreneurial (Osei & Zhuang, 2024). Farmers' attitudes towards participation in collective marketing through cooperatives is dependent on the knowledge they have about cooperatives. Knowledge is a critical factor that positively influences attitudes, and therefore the importance of informed decision-making in the cooperative movement cannot be gainsaid (Iyioku, 2024). One way of empowering farmers is by supporting and encouraging collective marketing of crops through farmers' cooperatives. It has been shown that farmers who participate in collective

marketing benefit from increased production and better sales. For instance, it has been found that participation in avocado collective marketing increased farmers' incomes by an average of 32.9% and participants produced significantly higher avocado fruits and fetched better prices compared to non-participants (Kwizerimana et al, 2023). Weak trust in cooperatives and delayed payments reduced the perceived benefits of coffee farming even in the context of higher prices. This reinforces the RCT's emphasis on expected outcomes rather than nominal prices. From the SLF perspective, institutions constitute a critical mediating structure that shapes access to markets, information and services.

Apart from trusted cooperatives, farmers require agricultural extension officers to offer farm advisory services, and reliable buyer and exporter firms. Trust in supportive institutions is important to the farmers in that it can promote farmers participation and shape their behaviour (Wang & Ma, 2025; Li & Gao, 2023). If the farmers are dealing with credible institutions, they are likely to commit fully to the crop that has support from these institutions. In Murang'a, coffee cooperatives were older and well established compared to avocado farming. Coffee cooperatives were better structured. Apart from a few instances where farmers sold cherry directly to coffee brokers, farmers in Murang'a County largely delivered their crop to cooperatives for processing and marketing. Farmers, however, reported that cooperatives faced challenges ranging from poor management, lack of transparency in pricing of coffee and delayed payments for the delivered cherry in contrast to avocado buyers who paid promptly.

The support by the government is crucial in the choice of the crop that farmers grow. Farmers in Murang'a reported that the government had recently started to be supportive to the coffee farmers by strengthening management of coffee cooperatives and having better prices and this was making coffee farming more attractive. In addition, compared to avocados, there was a lot of promises of better returns of coffee by politicians. The county government was also said to be very supportive of the avocado farmers. Although farmers were earning good income from avocados, they complained of exploitation by brokers, lack of buyers who could guarantee them timely collection and payment during bumper harvest, and too much insistence on quality standards which led to high rejection rates. These challenges threatened avocado farming even with its great potential. Farmers' access to information about prices, markets, buyers, quality requirements, as well as transparency in cooperative accounting and pricing of crops, heavily shape their trust (Codjoe et al, 2025; Ørtenblad & Larsen, 2026). Where cooperatives are opaque, or where brokers exploit farmers, this negatively affects the crop. Farmers reported to have moved to avocados partly due to perceived better reliability of payment and more trusted buyers. Farmers are more attracted to growing the crop when institutions support them to have better prices, provide them with extension services, help them to manage pests and diseases, and guarantee them market for their crops.

Conclusion and Recommendations

Choosing between coffee and avocados among the smallholder farmers is a response to economic rationality and livelihood considerations. Previous crop profitability, market price trends, access to farming inputs, and institutional support significantly influenced whether smallholder farmers returned to coffee or continued with avocados farming. While improved coffee prices created incentives for crop switching, the rebound in prices was too recent to

guarantee price stability. In addition, persistent risks, limited inputs, and weak institutional support by the government made farmers to choose cautiously, and to diversify rather than to fully revert to coffee farming. Smallholder farmers in Murang'a lacked proper guidance and support from extension officers that would enable them to make the best crop choices. Farmers were uncertain on whether to continue with avocados or revert to coffee. These findings highlight the importance of integrating market, resource and institutional factors when analysing agricultural decision-making.

Based on the research findings, the study makes the following recommendations:

1. The national and the County government and cooperative societies should improve cooperative governance, ensure timely and reliable payments including Guaranteed Minimum Returns (GMR) on the two crops, and implement trust-building programs to enhance farmers' confidence in institutional arrangements
2. The County government agricultural officers, input suppliers and NGOs should facilitate availability and affordability of quality seedlings, fertilisers and pesticides and encourage farmers to use organic manure. The government should also provide credit facilities to coffee and avocado farmers.
3. Extension officers, agricultural research institutions and farmers associations should regularly disseminate market information such as price trends, crop management practices and risk–mitigation strategies to enable farmers make informed, rational crop choices.
4. Since agriculture is a devolved function, the county government and development partners should devise crop diversification strategies. They should encourage farmers to adopt mixed cropping and intercropping practices that balance coffee and avocado farming. This will reduce farmers' vulnerability to price fluctuations and ensure long-term livelihood resilience.

Suggestions for Further Research

1. Further studies should examine the role of the youth in the future of cash crop farming in Kenya
2. Future studies should examine the environmental implications of shift from coffee to avocado farming in Kenya
3. Further studies should explore how participation of women in agricultural decision-making affects the adoption of coffee or avocado farming.

Ethical Considerations

Several ethical considerations were factored in when conducting interviews that generated data used in this study. Required authorisations were sought. The researcher and his three research assistants visited the area administrators and informed them that they were conducting interviews with farmers for a study on coffee and avocado farming. Before the start of every interview, researchers took time to explain to the farmers and the selected key informants what the study entailed and ensured that respondents voluntarily consented.

Questionnaires were anonymous and all the respondents were assured that they were free to discontinue the interview if they were not comfortable with the questions.

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Conflict of Interest

This study was conducted for academic purposes without any conflict of interest.

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