

Factors influencing the choice of market channels among cashew nut farmers in Mtwara rural district, Tanzania



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ABSTRACT

The cashew nut industry is one of the major agricultural sectors whose performance, through effective policies, can lead to increased economic development and improved welfare for Tanzanian farmers. The study assessed the factors influencing cashew nut production in Mtwara Rural District. Specifically, the study intended to examine the effects of demographic characteristics, market constraints, and institutional arrangements on market channel choice. A structured questionnaire was used to recruit 397 respondents through simple random sampling. Data were analyzed using descriptive and ordinary logistic regression methods. Results revealed that education level, gender, and alternative income sources were major drivers of farmers' market channel choice. Secondary education significantly increased the likelihood of formal market participation. In contrast, male farmers and those with other sources of income relied more on informal channels. Likewise, dealing with market constraints and institutional barriers positively influenced the choice of an informal cashew nuts market channel. The study concludes that policymakers and other actors should work collaboratively to improve the cashew nut marketing channel.

Keywords : Market Channels; Logistic Regression; Demographic Factors;
Market Constraints; Institutional Barriers



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INTRODUCTION

The livelihoods of many farmers in tropical regions worldwide depend on cultivating cashew nuts (Hegde, 2022). The global demand for cashew nuts has been increasing steadily due to rising consumer awareness of the health and nutritional benefits of cashews (Haritha & Ushadevi, 2022). Cashew is among the top six income-earning crops in Africa (Lukurugu et al., 2022). According to Babatunde et al. (2023), Benin, Ivory Coast, Burkina Faso, Mali, Ghana, and Tanzania are the top African cashew-producing countries. African countries have a relatively unregulated cashew market that relies on informal channels such as village traders and itinerant buyers (Omachi et al., 2024).

Traders operating in the informal cashew nut sector often work outside established regulatory frameworks, offering quick cash but little room to negotiate prices and no quality incentives. Formal marketing, when it exists, appropriately supports the marketing of commercial crops such as cashew nuts (Bannor et al., 2019). Markets in Africa are beset by hurdles that impede farmers from pursuing the route that will benefit them most, whether it be to channel into formal or informal markets. Farmers typically have limited access to market information, credit, and transport services, which restricts their participation in preferred market channels and limits their bargaining power (Sori & Adugna, 2022). Informal channels are somewhat flexible and less speculative, but also more volatile because they lack formal contracts and are vulnerable to exploitation by intermediaries. In Ghana, for example, informal buyers frequently avoid weighing steps and record purchase amounts below the actual quantities received from producers (Bannor et al., 2019).

The cashew nut sector remains a key pillar of Tanzania's rural economy and is especially important in the Southern regions, including Mtwara Rural District, Lindi, and Ruvuma. The Cashewnut Board of Tanzania (CBT) and Cooperative Societies responsible for farmers' marketing and production (AMCOS) implement cashew marketing through a warehouse payment arrangement. This system focuses on doing so by encouraging farmers to adopt transparency, quality control, and collective bargaining to provide assurance (Kimaro & Nnko, 2024). Yet it has long been criticized for failing to make timely payments to beneficiaries, for its limited reach in remote locations, and for bureaucratic bottlenecks. Farmers in the formal system frequently suffer from payment delays, slow access to timely market information and bureaucratic inefficiencies at AMCOs (Mang'ana, 2024). Cashewnuts Board (2025) reported the price of fresh nuts at the farm gate as Tanzanian shillings 2,510.00 per kilogram.

However, informal markets (generally unregulated) are still available as they provide an option for local sales that is almost casual in nature; transaction times tend to be quick and access is easy, but structure is typically less formal. The coconut marketing board has also made strides in transparency, but reliable, higher prices for agricultural goods remain far away (Manjunath & Girish, 2016). Some farmers and producers sustain sales to local traders for immediate cash through informal channels, but usually receive lower prices than under formal arrangements and lack contractual protections (Kimaro & Nnko, 2024). Farmers cannot sell their products profitably, organize farming through informal means, and grow at very low prices, which chains us as consumers (Kumar et al., 2023). In rural environments, they tend to be village buyers and intermediaries who pay cash for whatever the local quality standards are (Marson, 2022).

The existence of these market arrangements, which allow cashew nut farmers to sell their commodities informally, reduces the farmers' income and profitability (Dube, 2020; Kimaro & Nnko, 2024). Farmers have to either opt for the formal systems or go through informal channels, interacting with village traders. This decision is influenced by

transaction costs, infrastructural and institutional arrangements, and access to market information (Zhu et al., 2022). Formal systems increase farmers' transparency, timely payments, governance structures, and digital literacy (Mang'ana, 2024).

In contrast, informal channels provide cash-flow instantly and require less labor investment. However, farmers who use informal mechanisms are exposed to price manipulation, lack contracts, and are excluded from government programs that assist them (Zhu et al., 2022). Tanzania's cashew nut market system, with data collected and analyzed, shows that it remains underdeveloped (90% of raw cashew nuts are exported without any additional local value, reducing producers' income). Secondly, cashew nut farmers have very limited access to real-time market data from Tanzania (Kimaro & Nnko, 2023).

This study aims to examine the effect of selected demographic factors on the choice of market channels among cashew nut farmers in Tanzania, assess the influence of improvements in market constraints on farmers' market channel selection, and determine how institutional arrangements shape the market channels chosen by cashew nut farmers within the Tanzanian agricultural sector.

This study is of particular importance as it addresses a long-standing issue for smallholders in Tanzania's cashew nut production area who want to choose selling channels that will enable them to earn more without exploitation and improve their access to reliable markets. In areas where cashew is the primary source of livelihood, the study will be useful to offer recommendations for stakeholders involved in the cash nut value chain, such as warehouse owners, commercial banks, financial institutions, the Ministry of Agriculture, the board handling cash nut production and marketing, development partners, and farmers themselves. This study assessed the factors influencing farmers' choice of market channels in a context characterized by the coexistence of formal and informal systems. Insights into these drivers are key to more structured market participation by cashew farmers, strengthening their bargaining position and the long-term sustainability of Tanzania's cashew sector.

Additionally, the study adds to the small body of research concerning market behaviour in Tanzania's cashew sector. Although initial studies have examined trends in production and export volumes, little has been done to investigate the demographic variables and institutional determinants of market channel choice at the district level. Using the theory of random utility, this work provides a new theoretical perspective on modeling farmers' decisions under uncertainty, a perspective that has not been widely applied in Tanzanian agricultural market research. The results are important for policymakers, cooperative leaders, and development practitioners who aspire to build more inclusive formal market systems, strengthen value chains dominated by smallholder producers, or contribute to the sustainable commercialization of cashew nuts. The findings contribute to improving Tanzania's cashew nut sector, such as market systems, including infrastructure and better pricing systems; government interventions that create fair trading conditions.

LITERATURE REVIEW, RESEARCH FRAMEWORK, AND HYPOTHESIS

Sreedevi and Shanmugam (2024) assessed the small and marginal vegetable farmers' market channel selections of farmers in Kerala and confirmed that education, age, size of farm, and experience in farming significantly influenced choice for modern outlets, whereby younger and better educated farmers preferred to market through modern channels compared to older and less-educated farmers who were forced towards using traditional wholesale markets. Wanasinghe and Sachitra (2022) found that gender,

education level, mobile phone ownership, and farming experience were significant factors influencing Sri Lankan vegetable farmers' market channel choice.

Interestingly, marketing channel microeconomics determined that the choice of marketing channels promoted the Kenyan indigenous chicken farmers. These factors included group membership, education level (years of schooling), market distance (distance from the farm to the preferred market), transport charges, farm size, information costs, and negotiation charges (Kiprop et al., 2020). Mukarumbwa et al. (2018) asserted that Zimbabwe's vegetable farmers' choice of market channel was determined by education, gender, household size, sex, age, and farming experience.

Scholars have studied the institutional determinants that affected the choice of agricultural crop market channels in different ways. Eritrean smallholder vegetable farmers' market choice was determined by access to extension services and by members' participation in cooperative activities (Teame & Yacob, 2023). Nwafor (2021) demonstrated that membership in a cooperative, extension services, and access to credit facilities largely influenced South African cocoyam farmers' marketing channel choices. Waje et al. (2025) stressed the importance of institutional context in strengthening the potential for market participation and improving food security in South Africa.

Marketing channel choice has long recognized market factors as important determinants for farmers. For instance, in Western Oromia, Ethiopia, as evidenced by Sori and Adugna (2022), it was observed that groundnut producers' decisions about which channels to participate in were significantly influenced by distance from the market, transaction costs, and bargaining power among producers, highlighting how market dynamics shape participation across outlets. Marketing arrangements of shea nut actors in northern Uganda are influenced to a greater extent by the market distance-transaction costs-bargaining power nexus, while institutional supports, in terms of cooperative membership and access to extension services, moderate the level of participation (Lukwago et al., 2025).

Although studies in different parts of Asia and Africa on factors influencing farmers' market channel choice for crops like vegetables, dairy, poultry and cassava (Sreedevi & Shanmugam, 2024; Wanasinghe & Sachitra, 2022; Kiprop et al., 2020). Previous studies in the Tanzanian context have mainly focused on trends and export performance in cashew production (Kimaro & Nnko, 2024), with limited attention to household-level factors. Similarly, studies in Tanzania have focused on other crops, including rice, vegetables, and maize (Mgale & Yunxian, 2020). Therefore, farmer-based determinants of market channel choice have been scarcely studied in Tanzania; hence, the researchers were motivated to conduct this study to address this gap.

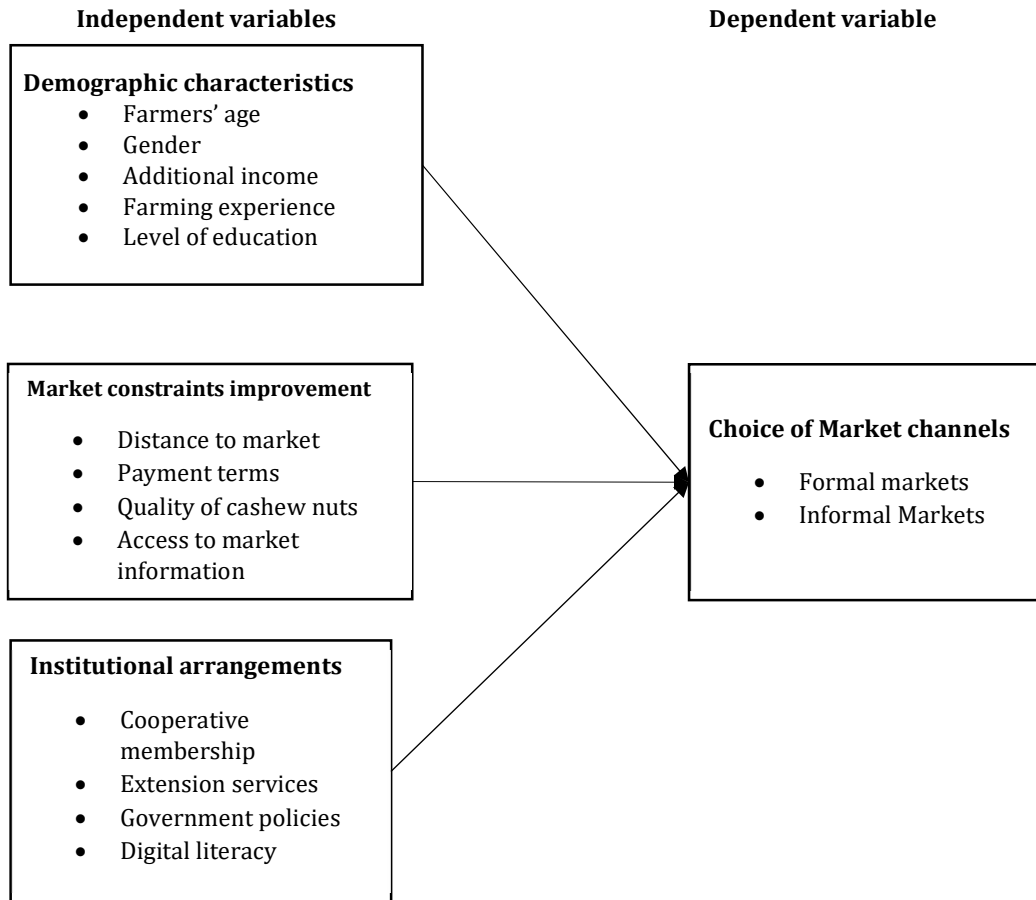
Based on our literature review, the researchers developed the following hypotheses:

H1: The demographic factors have a positive influence on the farmers' choice of the cashew nut market channel.

H2: Improvements in market constraints positively influence cashew nut farmers' market channel selection.

H3: The institutional arrangements positive influence on cashew nut farmers' market channel selection.

The conceptual framework (Figure 1) provides the basis for relating the independent variables, which include demographics, market, and institutional arrangements, to the dependent variable, which is market channel choice among cashew nut farmers.



Source: Researcher Design, 2025

Figure 1
Conceptual Framework

The figure also indicates that perennial farming experience, education level, and age affect farmers' perceptions and administrative capacity, as well as the delimitation of crops between formal and informal markets. The economic feasibility (cost, price received) to choose a market channel is based on constraints like payment terms, market information access, and market distance (both geographically) between a farmer and buyer, but also provides different ease of use that probably influences whether a farmer finally chooses a structured formal channel or an informal one that he/she can easily access. Institutional arrangements such as cooperative membership, access to extension services, credit availability, and digital literacy affect the provision of resources and support systems that enhance participation in formal market channels. These independent variables together capture the utility farmers derive from different market options and ultimately influence their choice between formal and informal channels.

METHOD

This market choice assessment study was carried out in Mtwara Rural District, the southern mainland of Tanzania. Place for the production and marketing of cashew nuts. The district produces large quantities of cashew nuts and is an important part of Tanzania's agricultural economy. It is 565 kilometers from Dar es Salaam, a commercial

city, and is bordered to the south by the Tandahimba District, to the west by the Masasi District, and to the east by the Indian Ocean. June to October, and November to May form the rainy and dry seasons. The district has a tropical climate with two seasons. 800 to 1,200mm is the annual rainfall range, and 23 to 31°C is the temperature range, creating ideal cashew agroecological farming environments.

In Mtwara Rural District, farmers sell cashews through official agricultural cooperatives, marketing societies, or informal channels (for example, local traders and markets). While structured systems are in place, farmers are still struggling with market access, price fluctuations, and inefficiencies (Kimaro & Nnko, 2024). In data collection, the random sampling technique ensured independent selection for each farmer, thereby improving sample accuracy, as suggested by Kirk and Beaujean (2025). After obtaining a complete list of farmers, each farmer was assigned a code number, which was written on a separate piece of paper. Then the researchers randomly folded the pieces of paper and selected each farmer to obtain the computed sample size as recommended by Noor et al. (2022). The sample size of 397 was computed using Yamane's 1967 formula. The formula is :

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

Where:

n=computed sample size

N= size of the population

e= the social science margin of error, which is 0.05.

Inserting the given information in the formula, the sample size of 397 farmers was calculated.

The enumerators collected primary data on the cashew nuts market channel using structured questionnaires. The questionnaires contained closed-ended items with predetermined answers related to demographic variables, market and institutional drivers of market channel choice, and other demographic factors. The data analysis was conducted using a summary of percentages and frequencies (descriptive) and a two-outcome logistic regression. The logit model was written following this order:

$$Y = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$$

Y = market channel farmers' decision

P=formal market channel selection probability

1-P = informal market channel selection probability

$\ln\left(\frac{p}{1-p}\right)$ = formal market channels Log-odds

β_0 =Is the Y-Intercept

$\beta_1, \beta_2, \beta_3$ =independent variable coefficients

(X₁-Demographic variables, X₂-Institutional arrangements, X₃- Market constraints minimization, μ is an error term.

Pearson correlation coefficients among the explanatory variables were below the recommended critical value of 0.50, indicating no multicollinearity per VIF diagnostics (Shrestha, 2020; Singh et al., 2023). Moreover, as proposed by Kyriazos and Poga (2023), all Variance Inflation Factor (VIF) values were between 1.063 and 2.322, below the 10 cutoff. The tolerance coefficient values ranged from 0.431 to 0.941, exceeding the recommended threshold of 0.1.

RESULTS AND DISCUSSION

The empirical findings (Table 1) present the frequencies and percentages of cashew nut farmers' demographic variables such as age, level of education, experience in farming, gender and income status. The findings summarize respondents' characteristics and relate to cashew-marketing choice. The inferential analysis, using binary logistic regression, assesses the significance and predictive power of all independent variables (individual and institutional arrangements) influencing farmers' choice of market channels (Table 2).

Age

According to Table 1, most (82.6%) of the farmers who grew cashews in Mtwara Rural District were aged 36 years and above. In fact, 48.2 percent of respondents were aged between 36 and 55 years old, while 34.4 percent were older than 55 years. In comparison, the cashew nut production sector had only 17.4 percent of respondents aged 18–35, highlighting a lack of youth in that sector.

Education

The findings in Table 1 indicate that most farmers (52.7%) had primary education, 11.6% had secondary education, and 14.1% had post-secondary education. The findings indicate that at least the majority of cashew nut farmers in the Mtwara rural district had basic education, making it easy to train them in cashew nut production and marketing techniques. Training in marketing techniques is essential to promote the appropriate market channels for cashew nut farmers. Hence, the findings indicate that basic education facilitates easy marketing training for cashew nut farmers.

Table 1
Descriptive Statistics for Factors Influencing the Choice of Market Channels

Variable	Frequency	Percent
Age (Years)		
18-35	54	17.4
36-45	150	48.2
Above 45	107	34.4
Education level		
Primary education	164	52.7
Secondary education	36	11.6
Postsecondary education	44	14.1
Gender		
Female farmers	132	42.4
Male farmers	179	57.6
Farmers' Experience		
Farmers with not more than 5 years	65	20.9
Farmers with 5 to 20 years of experience	147	47.3
Farmers with 20 years and above	99	31.8
Income		
Farmers with mixed cropping	160	51.4
Farmers with no fixed cropping	151	48.6
Total	311	100.0

Source: Research data, 2025

Gender

The gender distribution of cashew farmers showed that male farmers outnumber female farmers, with 57.6 percent and 42.4 percent, respectively, among respondents. This moderate disparity highlights women's engagement in cashew production. However, they exhibit marginally lower engagement with market channels than the male population.

Experience

Farmers who had participated in cashew production for 5-20 years were the largest group of respondents (47.3%). Another 31.8% had over 20 years of experience, which is probably indicative of a reasonably strong long-term base and, hence, knowledge of this market. The findings established that 20.9% of farmers had less than 5 years' experience, indicating that new to cashew farming.

Income

The descriptive findings revealed that 48.6 percent of farmers did not plant anything other than cashew nuts, while only 51.4 percent added another crop, focusing exclusively on cashew production. This distribution indicates that nearly half of the farmers had adopted strategies to generate income from multiple sources, while the remaining had relied solely on cashew nut farming for their livelihoods.

Binary Regression Analysis

Table 2 presents the findings from a binary regression model assessing how independent factors influenced the dependent variable. The results are presented and discussed in the subsequent sections.

Age

Table 2 shows the results of binary logistic regression analyses, in which age was treated as a categorical variable. The findings indicated that older farmers (36–55 years) had a lower likelihood of selecting formal market channels compared to the 18–35-year age group, with a significant effect ($\beta = -0.382$, $p > 0.05$, $\text{Exp}(B) = 0.683$). This indicates that farmers aged 3 might face moderate constraints or preferences against entering formal market systems (although the evidence was mixed). In farmers aged 55 years and over, the likelihood of listing formal channels was lower ($\beta = -0.951$, $p > .160$, $\text{Exp}(B) = 0.386$), indicating a stronger negative relationship but not significant ($P > 0.05$). The lower odds ratios for both older groups indicate that younger farmers (18–35 years) tend to participate in more formal markets, which may be explained by greater training, technology, or institutional support. This was also reported by Mmasa (2012), who observed that younger farmers readily adopt market innovations, whereas older farmers tend to continue using traditional or informal systems.

Education

The inclusive effect of education on channel choice is significant ($p < 0.05$), suggesting that education significantly influenced farmers' market decision-making. Farmers without formal education (a few years or none) were the reference, with their odds of being engaged in formal market channels relative to farmers with higher levels of education serving as a baseline for limited engagement in formal systems. While farmers with secondary education were significantly more likely to select formal channels than farmers with no education ($\beta = 1.974$, $p = .024$, $\text{Exp}(B) = 7.202$), indicating that both

formal education and exposure to market information greatly increase the likelihood of formal participation. Similarly, post-secondary education was positively associated ($\beta = 1.458, p = .000, \text{Exp}(B) = 4.296$) but this did not achieve statistical significance. Primary education exerted the least influence ($\beta = 0.512, p = 0.106$ or higher, $\text{Exp}(B) = 1.669$), suggesting only a marginal difference when contrasted with the reference group. This result is in line with previous findings by Dogeje (2024) that farmers' literacy level positively affected contract farming participation, as education helps farmers access market information and reduces transaction costs. Education played a vital role in equipping farmers with the confidence to engage with formal markets, due in part to the trust developed through institutional support and improved interpretation of information and market signals (Ismail, 2024).

Gender

Additionally, gender significantly affected market channel choices. Male farmers, in this respect, were less likely to opt for formal market channels than female farmers ($\beta = -1.250, p < 0.11, \text{Exp}(B) = 0.286$), above and beyond the effects of all other variables in the model, being male was associated with a nearly 71% decrease in the odds of formal market participation compared with females (Table 2). This means that female farmers in the sample were less likely to engage with formal market systems, perhaps because they were better integrated into institutions, cooperatives, or balanced programs. These results stand in contrast to common assumptions in the agricultural literature that men are, by nature, or have a larger market orientation than women (Yaseen et al., 2018). However, as shown in a study by Kandi et al. (2025), High participation by women in the formal market is possible when access barriers are removed and production is primarily under women's control.

Table 2
Logistic Regression Results for Factors Influencing the Choice of Market Channels

	Variables	B	S.E.	Sig.	Exp(B)	95% C.I for EXP(B)	
						Lower	Upper
Age	18-35			.318			
	36-55	-.382	.913	.676	.683	.114	4.089
	Above 55	-.951	.676	.160	.386	.103	1.454
Education	No formal education			.043			
	Primary	.512	.957	.592	1.669	.256	10.892
	secondary	1.974	.873	.024	7.202	1.302	39.835
	Post-education	1.458	.944	.122	4.296	.676	27.318
Gender	Male	-1.250	.490	.011	.286	.110	.748
	Less than 5			.210			
	5-20	-.926	.895	.301	.396	.069	2.287
Experience	Above 20	.277	.697	.691	1.319	.337	5.171
	Other source of income	-2.212	.683	.001	.109	.029	.418
Market constraints	Markets	-2.803	.511	.000	16.494	6.064	44.862
Institutional constraints	Institutions	-2.113	.598	.000	8.271	2.561	26.707
	Constant	-11.509	2.235	.000	.000		

a. Variable(s) entered on step 1: Age, Education, Gender, Experience, Income, Markets, Institutions.

Source: research results, 2025

Experience

Year of experience, which consisted of the time that market channel operators in this model had worked with their respective factors. The findings (Table 2) indicate that years of farming were not a strong predictor for participation in formal markets. The findings suggest that, compared with farmers with less than 5 years of experience, those with 5–10 years of experience were less likely to select formal channels ($\beta = -0.926$, $p > 0.05$, $\text{Exp}(B) = 0.396$).

This could indicate a trial-and-error transitional stage, in which mid-career farmers might lack market literacy. Farmers with more than 10 years of farming experience had a weak positive correlation ($\beta = 0.277$, $p > 0.05$, $\text{Exp}(B) = 1.319$) with formal market engagement; that is, farmers who have spent more than a decade on the farm were unlikely to engage in formal crop marketing. However, the impact was not statistically significant.

These results indicate that experience alone did not necessarily ensure market entry and may need to be supplemented in other ways. More recent evidence from authors such as Manda (2021) shows that market participation occurred only when coupled with access to multiple output markets and favorable institutional structures.

Other Sources of Income

The presence of alternative earnings showed a significantly negative effect on market channel choice ($\beta = -2.212$, $p < 0.01$, $\text{Exp}(B) = 0.109$). Farmers with alternative sources of income were significantly less likely to market through formal channels than pure farmers. Formal market participation was estimated to be 89% less likely among diversified-income farmers than for those without other income sources, as indicated by the odds ratio.

This indicates that off-farm income-dependent farmers rely more on informal market channels, which may be attributable to greater constraints in formal markets; greater elasticity away from dependence on farm income; and investment in local networks sustained by family connections and community ties, enabling transactions to occur much faster and with greater flexibility.

These results align with the findings of Kimaro and Nnko (2024), who reported that coffee and cashew farmers with off-farm income diversified their earnings away from organized agricultural systems, thereby reducing participation in cooperative market channels in Tanzania.

Market Constraints

The findings indicate that as the marketing constraints improved, market channel choice increased ($\beta = 2.803$; $p < 0.001$). By exchanging credit, a set of possible distinctions regarding developments in currency in the dominant non-traditional sectors and their respective growth potential. Farmers faced fewer market barriers, such as shorter market distances and better payment terms, reported more consistent cashew production, and had reliable access to market information.

The findings (Table 2) show that these farmers had a 16-fold higher likelihood of opting for formal marketing channels. The broad confidence intervals ($\text{Exp}(B) = 6.064\text{--}44.862$) indicate that improvements in any of these indicators have a notable impact on formal market participation. For example, access to market information and proximity to buyers were among the significant factors determining maize farmers' market participation in Ethiopia (Haile et al., 2022).

Ma et al. Souza et al (2024) pointed out that improving market barriers with poorly structured and opaque pricing systems is key to ensuring smallholder inclusion. Moreover, across Sub-Saharan Africa, limitations of inadequate road networks and scaled-down producer associations perpetually impede farmers' formal marketing engagement (Magakwe & Olorunfemi, 2024).

Institutional Constraints

As shown in Table 2, institutional constraints had a significant negative effect on farmers' choice of market channels ($\beta = 2.113$, $p < .00$; $\text{Exp}(B) = 8.271$). It means that farmers with lower constraints on access to institutions, including cooperatives, extension services, a conducive policy environment, and digital know-how, were two or more times as likely to participate in formal markets ($\text{OR}=8.123$, 95% CI: 2.674 to 26.160).

The confidence interval ($\text{Exp}(B) = 2.561-26.707$) indicates that even minor alleviations in institutional conditions can lead to a significant intensification of formal market participation. The results of this study are in line with the conclusions by Jari and Fraser (2009) on the effects of institutional support, particularly via farmer organizations and contractual arrangements. In Lesotho, dairy farmers were more likely to market milk through formal markets if government programs and collective action structures were present (Rantlo, 2020).

This created significant opportunities to explore and leverage the business potential of smallholders. Saha et al. (2020) argued that enabling policy environments and institutional demand are one of the most important drivers of smallholder commercialization across Africa.

CONCLUSION AND SUGGESTION

The research found that farmers' education level and gender, as well as various socioeconomic variables, have a considerable impact on their choice of marketing channels. In particular, secondary education increased farmers' likelihood of interacting with formal channels, whereas being male or having an alternative income source increased their likelihood of using informal channels.

Farmers' choice of market channels was strongly constrained by market constraints and institutional arrangements. Greater access to market information and better payment systems meant that participating in formal markets was more confident. Additionally, constructive institutional arrangements like cooperative access, extension services, and favorable government policies enhance farmers' access to structured market channels. These results offer a basis for policy interventions aimed at reducing market barriers, strengthening institutional support and promoting formal market participation to improve the livelihoods of cashew producers in the region.

This study faced some limitations. Firstly, the focus was on a single district, which might limit the generalizability of some findings. Moreover, the study used the binary logistic model, which has some limitations in capturing real-world situations and in its inferential properties compared with ordinary linear regression and other advanced data analysis methods, such as structural equation modeling. The researcher was also preoccupied with the quantitative approach, which has the limitation of not providing in-depth explanations of some concepts. The study also focused on only three variables, omitting the others. However, apart from those limitations, the study is useful in highlighting how demographic determinants, marketing, and institutional factors influenced cashew nut farmers' choice of market channel. The study contributes to random utility theory by identifying the circumstances that motivate farmers to adopt

the formal market channel for cashew nut produce. The study highlights the need for policymakers to amend and improve agricultural policies to promote the effective marketing of cashew nuts in Mtwara Rural District and across Tanzania.

Future research should broaden the possible applications by incorporating more socio-economic and institutional elements. The farmer's ability to obtain reliable market information should be exposed to cooperative models, and to use digital engagement and social norms that influence formal cashew nut marketing choice behavior. Training cashew nut farmers is vital for creating awareness of marketing dynamics. Of course, training will inform farmers about the opportunities and challenges of participating in formal markets, as well as how to overcome them. It is essential for cashew nut farmers to be integrated into sustainable cashew nut marketing frameworks. Flexible modeling approaches are recommended for other studies where farmers' preferences and constraints are likely to vary.

Future studies are recommended to use mixed-methods designs that blend quantitative analysis with qualitative understanding. The studies may also use the advanced inferential model to better explain the variables. Using multiple variables may provide a holistic picture of the factors influencing the choice of market channel for cashew nuts. The study's wide geographical coverage will enable generalization of the findings. Comparative studies and those that emphasize the use of middle variables, such as moderating, mediating, and control variables, are also recommended.

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