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INCOME LEVELS AND DAIRY FARMERS' MEMBERSHIP IN COOPERATIVE SOCIETIES: A CASE OF GITHUNGURI DAIRY FARMERS COOPERATIVE SOCIETY, KENYA

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ABSTRACT
This paper investigated the influence of income levels on dairy farmers' membership in cooperative societies, focusing on the Githunguri Dairy Farmers Cooperative Society in Kiambu County, Kenya. Cooperative societies are widely recognized for promoting economic stability, collective bargaining, and market access among smallholder farmers. While previous studies have shown that cooperative membership can enhance household income, there is limited empirical evidence on how pre-existing income levels determine farmers' decisions to join and remain active in cooperatives. Using a descriptive research design, data were collected from 316 respondents comprising management and staff through structured questionnaires. Descriptive statistics summarized member perceptions of income stability, while inferential analyses—including Pearson's correlation and simple linear regression—examined the relationship between income levels and membership. The findings indicate a positive and significant correlation ($r = 0.523$, $p < 0.01$), with regression analysis confirming that income levels significantly predict cooperative membership ($\beta = 0.215$, $p < 0.01$), explaining 27.3% of the variation in membership. Higher and more stable income enhances farmers' ability to meet cooperative obligations, strengthens trust in management, and fosters long-term participation. These results support Rational Choice Theory by demonstrating that farmers' economic incentives influence their cooperative engagement. Practically, the study recommends implementing stable pricing, timely bonuses, and transparent profit-sharing mechanisms to enhance member loyalty, while policymakers should support initiatives that stabilize incomes and reduce barriers to participation. Future research could explore the impact of digital platforms and socio-cultural networks on membership decisions, complementing income-based analyses.
Keywords: *Cooperative membership, Dairy farmers, Income levels, Rational Choice Theory, Smallholder farmers*

INTRODUCTION
Globally, the relationship between income levels and cooperative membership has been explored in many settings. For example, in Zanzibar, cooperative members were found

to generate on average 28% more annual income than non-members, indicating that income differences are both a cause and consequence of membership (Ali, Gao, & Ge, 2024). Studies in China similarly show that cooperative membership not only increases household income but also reduces income inequality among rural households (Zou & Wang, 2022). These findings suggest that across diverse socioeconomic environments, higher income enhances the ability to enjoy cooperative benefits, while membership in cooperatives can, in turn, improve household incomes and welfare.

In Singapore and Malaysia, the cooperative sector contributes substantially to national income and social development, though few studies have directly examined how individual farmers' income levels affect their membership decisions. In Malaysia, there are over 14,000 cooperatives with a combined income of RM22.4 billion and membership fees and share capital amounting to RM16.5 billion, indicating that cooperatives themselves are significant income generators (The Star, 2023). While these statistics demonstrate the macroeconomic significance of cooperatives, they do not provide micro-level evidence linking smallholder farmers' income levels to their ability or willingness to join cooperatives. This gap highlights the need for more targeted studies in Southeast Asia, particularly among dairy farmers, where cooperatives can serve as vehicles for inclusive growth and financial stability.

In Ghana and Uganda, there is clearer empirical evidence on how cooperative membership and income levels influence each other. In Ghana, an empirical study of fish farm households found that cooperative membership increased household income by about 28.5% and farm income by about 34.8% compared to non-members (Ankrah Twumasi, Jiang, Addai, Ding, & Asante, 2021). Similarly, in Uganda, dairy farmer groups linked to milk processors revealed that farmers with higher earnings were more likely to engage in cooperative value chains because their financial capacity to transport milk, supply regularly, and meet quality standards made membership more viable (ILRI, 2018). These cases illustrate that in developing economies, income levels are both determinants and outcomes of cooperative participation, shaping inclusivity and sustainability within the agricultural sector.

Cooperative societies are widely acknowledged for their role in enhancing economic well-being among smallholder farmers. These organizations enable collective responses to challenges such as market access, input procurement, and income instability. In Kenya, dairy cooperatives are especially important because they help farmers gain more predictable income through formal market channels, quality control, and shared processing infrastructure. Studies show that cooperative market participation increases farmers' incomes; for example, in Nyamira and Homa Bay counties, cooperative participation was associated with about a ten percent increase in income among smallholder dairy farmers (Onyango, Owuor, Rao, & Otieno, 2023). Income levels

influence whether farmers can afford membership fees, share contributions, and meet regular supply obligations to cooperatives.

In many Kenyan dairy farming communities, income varies greatly across households. Factors such as the number of lactating cows, distance to market, milk payment period, and farm size are significant determinants of income and thus affect farmers' ability to participate fully in cooperatives (Onyango et al., 2023). For farmers with lower income levels, the costs of inputs, feed, veterinary services, and transport may limit their ability to commit to cooperative obligations. Conversely, farmers with higher or more stable income are more likely to become members, maintain regular milk deliveries, and benefit from cooperative services. Understanding this relationship is essential because membership in cooperatives is tied to improved incomes and livelihoods.

Although cooperatives can contribute to increased incomes among dairy farmers in Kenya, there remain many who do not join or fully participate in these organizations. The variability in income levels among dairy farmers means some cannot meet the financial requirements of cooperative membership or sustain regular participation. While research has shown that cooperative participation raises farmer income (Onyango et al., 2023), there is less clear evidence about how specific income levels influence membership decisions, retention, and the extent of participation in cooperatives. This study addresses that gap by examining how different levels of income affect dairy farmers' membership in cooperative societies, focusing on Githunguri Dairy Farmers Cooperative Society in Kiambu County. By exploring income thresholds and constraints faced by low-income farmers, the study aims to identify what level of income enables membership and what levels inhibit it. The findings will help cooperatives design membership policies and practices that are more inclusive of farmers at diverse income levels.

This study is important for cooperative management because it will provide clear evidence about the income thresholds required for membership and participation. Cooperatives like Githunguri can use this information to adapt their membership criteria or introduce tiered membership fees so that lower income farmers are not excluded. For policymakers, the study's findings will highlight socio-economic barriers to cooperative inclusion and inform policies aimed at increasing financial equity in dairy farming. For researchers and academicians, the study adds empirical knowledge about income as a determinant of membership rather than assuming all farmers are equally able to participate. Ultimately, the study aims to contribute to more inclusive cooperative structures, improved farmer incomes, and sustainable participation in Kenya's dairy sector.

LITERATURE REVIEW

Theoretical Literature Review

Agency Theory

Agency Theory, developed by Ross (1973) and later advanced by Mitnick (1975), examines the relationship between principals, who delegate authority, and agents, who are expected to act on their behalf. The theory assumes that agents may pursue self-interest at the expense of principals, especially when information asymmetry and weak monitoring exist. In the context of agricultural cooperatives such as Githunguri Dairy, farmers act as principals while cooperative managers serve as agents, entrusted with decisions regarding pricing, profit distribution, and overall management.

The theory emphasizes transparent governance structures that align the interests of agents with those of principals. In Githunguri Dairy, for example, poor governance practices such as a lack of accountability or limited transparency can breed mistrust, causing farmers to withdraw their membership. Conversely, governance mechanisms like member elections, regular audits, and participatory meetings help minimize opportunistic behavior and strengthen accountability (Mitnick, 1975). When farmers believe that management acts in their best interest, they are more likely to remain loyal members.

Resource Dependence Theory

Resource Dependence Theory (RDT), introduced by Pfeffer and Salancik (1978), explains how organizations depend on external resources and must develop strategies to manage these dependencies. The theory posits that organizational survival depends on acquiring and maintaining critical resources such as capital, markets, and inputs, often controlled by external entities. For dairy cooperatives like Githunguri, these include access to credit, reliable milk markets, and affordable animal feed. Resource Dependence Theory underscores the role of governance in managing resource dependencies. Strong leadership and effective board oversight help cooperatives negotiate better prices and partnerships with processors and suppliers. Njiru (2018) found that transparent and participatory governance strengthens bargaining power, enabling cooperatives to secure vital resources and enhance member welfare. Weak governance, on the other hand, can result in poor negotiation outcomes and declining member confidence.

Empirical Literature Review

Several studies have explored the relationship between income levels and cooperative membership. Ekwere (2019) investigated farmers in Anambra State, Nigeria, and found that cooperative membership significantly increased household income, with a moderate positive correlation ($r = 0.438$, $p < 0.01$). The study highlighted benefits such as enhanced credit access and value addition through processing. However, its main limitation is that it focuses on income gains after joining cooperatives, rather than examining whether pre-existing income levels influence the decision to join. Similarly, Onduko et al. (2021) analyzed housing cooperatives in Nairobi and found a positive correlation between

income and participation ($r = 0.401$, $p < 0.05$), showing that higher-income members were more active. Nonetheless, their urban and non-agricultural context limits the applicability of the findings to rural dairy farmers.

In Kenya, Gachara (2018) investigated SACCO membership and found income significantly related to cooperative expansion ($\beta = 0.312$, $p < 0.05$). The study recommended tailored financial products and competent personnel to enhance growth, but it conflated financial service challenges with income as a membership determinant. Ali et al. (2024) conducted a study in Zanzibar, reporting that cooperative members earned 28% more than non-members, with income positively predicting membership ($\beta = 0.293$, $p < 0.01$). Although the findings emphasize the economic benefits of membership, the study assumed income gains resulted from membership rather than exploring whether higher pre-existing income encourages participation, leaving the directionality of the relationship unclear.

Other studies have indirectly touched on income as a factor in cooperative performance. Wanjau et al. (2019) found that members' characteristics positively influenced cooperative financial performance, but did not consider income as a precondition for joining. Similarly, Njiru and Rambo (2018) highlighted the role of education, technology, and governance in improving cooperative performance in Embu County, yet the study overlooked how income variability, such as seasonal milk revenues, affects farmers' ability to meet financial obligations, which is critical for understanding membership decisions in dairy cooperatives. Collectively, these studies indicate a positive relationship between income and cooperative participation, but a research gap exists regarding how pre-existing income levels influence the decision to join rural dairy cooperatives.

Summary of Research Gaps

In summary, the reviewed studies consistently indicate a positive relationship between income levels and cooperative membership across various contexts. For instance, Ekwere (2019), Onduko et al. (2021), Gachara (2018), and Ali et al. (2024) all found that higher income either promotes cooperative participation or results from membership, suggesting that financial stability enhances the likelihood of joining cooperatives. However, most of these studies were conducted outside the dairy sector or in urban financial and housing cooperatives, which limits their relevance to rural agricultural contexts. Moreover, they primarily examined income as an outcome of cooperative membership rather than as a determining factor influencing the decision to join. Local studies such as Wanjau et al. (2019) and Njiru and Rambo (2018) also overlooked the role of income variability and farmers' financial capacity in membership decisions. Therefore, a key research gap exists in understanding how pre-existing income levels affect dairy farmers' willingness and ability to join cooperatives, particularly within Kenya's rural context, such as the Githunguri Dairy Farmers Cooperative Society.

CONCEPTUAL FRAMEWORK

A set of principles derived from the subject under study to show the pictorial relationship between study variables constitutes a conceptual framework (Kombo & Tromp,2009). The conceptual framework shows the relationship between income levels and cooperative membership

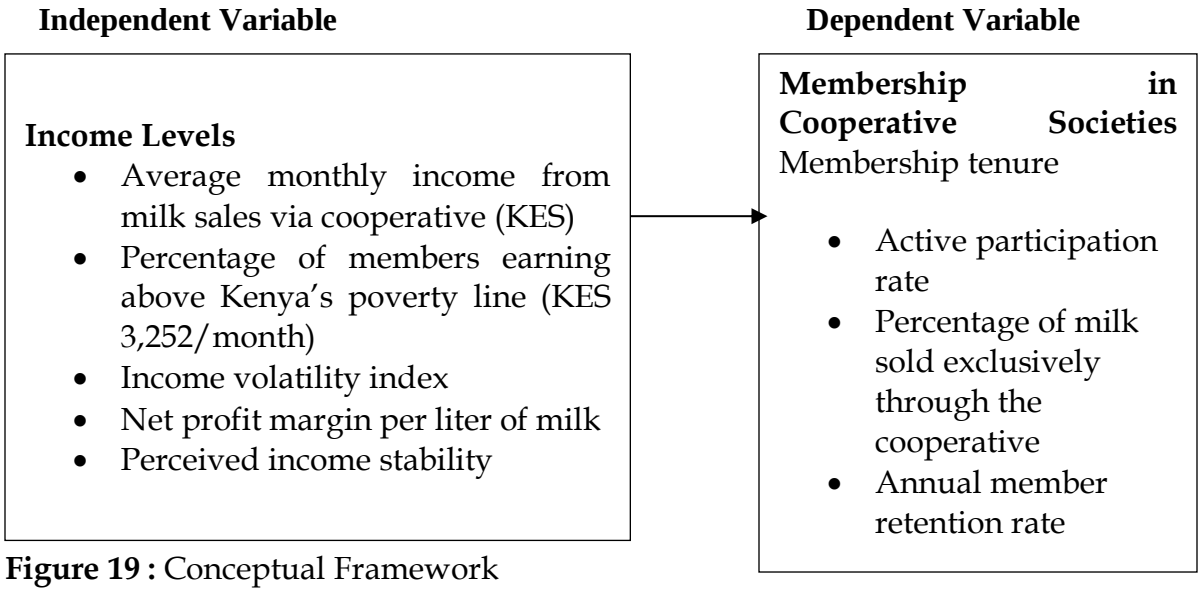

Figure 19 : Conceptual Framework

METHODOLOGY

The main objective of this study was to examine the relationship between income levels and dairy farmers' membership in cooperative societies, using Githunguri Dairy Farmers Cooperative Society as a case study. The study adopted a descriptive research design, which is suitable for investigating current conditions and relationships between variables without manipulating them. Descriptive designs are commonly used in social and management sciences because they provide a clear understanding of "what," "how," and "why" relationships exist among observed phenomena (Creswell & Poth, 2021; Saunders, Lewis, & Thornhill, 2019). This approach enabled the researcher to capture views and attitudes of members and staff toward governance practices and their influence on membership trends.

The study was conducted at Githunguri Dairy Farmers Cooperative Society in Kiambu County, one of Kenya's most successful dairy cooperatives with over 17,000 registered members. The target population comprised 1,515 individuals drawn from the cooperative's management and staff, as they are directly involved in decision-making, member coordination, and implementation of governance policies. The population was categorized into top management, middle management, and operational staff to ensure representation of perspectives across organizational levels. Stratified random sampling was used to select respondents proportionately from each category. The sample size of 316 participants was determined using Yamane's formula for finite populations,

assuming a 5 percent margin of error, ensuring a balance between accuracy and practicality.

Primary data were collected using a structured questionnaire consisting mainly of closed-ended questions. The instrument was designed to capture measurable perceptions related to income levels, regulatory framework, access to credit, income levels, and membership dynamics. Questionnaires were preferred due to their ability to gather standardized data efficiently and to promote anonymity, thereby encouraging honest responses (Kumar, 2010; Creswell & Creswell, 2018). The researcher obtained an introductory letter from the Management University of Africa (MUA) and a research license from the National Commission for Science, Technology and Innovation (NACOSTI). With authorization from Githunguri Dairy's Human Resource Department, the questionnaires were distributed and collected using the drop-and-pick-later method over two weeks.

To ensure the validity and reliability of the instrument, a pilot study was conducted using 31 respondents drawn from Gatundu South Dairy Cooperative, which shares similar operational characteristics with Githunguri Dairy. Content validity was confirmed through expert review by cooperative specialists and the research supervisor, ensuring each item reflected the study objectives. Construct validity was achieved by refining questions for clarity, while criterion validity was confirmed through comparison of self-reported data with cooperative records such as membership lists and loan registers. Reliability was assessed using Cronbach's alpha coefficient, with values above 0.75 considered acceptable for internal consistency (Best & Kahn, 2006; Mugenda & Mugenda, 2020).

After data collection, the questionnaires were edited, coded, and entered into the Statistical Package for Social Sciences (SPSS) version 22 for analysis. Descriptive statistics such as means, percentages, and standard deviations were used to summarize the data, while inferential statistics were employed to establish relationships between variables. Specifically, Pearson's correlation coefficient (r) was used to measure the strength and direction of association between income levels and membership, whereas multiple regression analysis was applied to test the predictive power of the independent variables on the dependent variable. The regression model adopted was expressed as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

where Y represents membership in cooperative societies, X_1 is income levels, X_2 is regulatory framework, X_3 is access to credit, X_4 is income levels, β_0 is the constant, β_1–β_4 are the regression coefficients, and ε is the error term. The results were presented using tables for clarity and ease of interpretation.

The analysis provided a statistical basis for hypothesis testing, where the null hypothesis stated that income levels have no significant influence on dairy farmers' membership in cooperative societies. Significance levels were evaluated at $p < 0.05$. Findings were used to determine the strength of the relationship between income levels and membership, as well as to provide recommendations for enhancing cooperative management and member engagement in Kenya's dairy sector.

FINDINGS.

Descriptive Analysis of Income Levels

This section examines how income levels influence dairy farmers' membership in Cooperative Societies. Table 1 presents the respondents' level of agreement with statements related to income levels and their impact on cooperative membership. The responses were measured on a scale where 1 indicates strongly disagree, 2 represents disagree, 3 denotes neutral, 4 signifies agree, and 5 reflects strongly agree.

Table 59: Descriptive Statistics on Income Levels

Statement	N	Min	Max	Mean	Std. Dev
More than 50% of the cooperative's board members are elected directly by registered farmers	270	1	5	4.21	0.81
Audit reports are distributed or made accessible to members on a scheduled and recurring basis (e.g., quarterly or annually).	270	1	5	4.05	0.94
Member mobilization records confirm that cooperative representatives routinely encourage member attendance.	270	1	5	3.97	0.89
The cooperative has a documented and publicly accessible procedure for handling member complaints.	270	1	5	4.1	0.87
Member complaints are formally resolved within an average timeframe of 30 days from the date of submission.	270	1	5	3.89	0.95
Disciplinary measures are applied when cooperative leaders are found to have committed misconduct.	270	1	5	3.76	0.9

The descriptive results presented in Table 1 show that respondents strongly agreed that more than half of cooperative board members are elected directly by registered farmers ($M = 4.21$, $SD = 0.81$). This finding underscores the value of democratic representation in cooperative governance, where active member participation strengthens accountability

and trust. According to Bosco and Moses (2023), farmer-elected boards in Uganda significantly improved SACCO performance by promoting inclusivity and responsiveness to member needs. Similarly, Kibue and Mang'ana (2022) found that democratic governance structures in Kenya fostered confidence in cooperative leadership, enhancing membership retention. Audit transparency also scored highly (M = 4.05, SD = 0.94), suggesting that regular audit report dissemination promotes accountability and trust. Macharia and Njogu (2022) emphasized that transparent financial reporting reinforces governance credibility, attracting member participation. Wafula and Miroga (2024) further reported that regular audit disclosures in Nairobi SACCOs curtailed mismanagement and improved performance, demonstrating that transparency is a cornerstone of sustainable cooperatives.

The study also established that member mobilization, measured through representatives' encouragement of attendance, had a mean of 3.97 (SD = 0.89), implying that while participation is frequent, improvement is possible. Rao and Singh (2023) found that continuous mobilization in Indian dairy cooperatives fostered collective responsibility and loyalty among farmers. Similarly, Desai, Sharma, and Gupta (2022) attributed Amul's success to robust member engagement and mobilization strategies. Another vital indicator was the existence of publicly accessible procedures for resolving member complaints (M = 4.10, SD = 0.87), which enhances fairness and cohesion. Mukasa, Njuguna, and Kalama (2022) noted that grievance-handling frameworks in East African cooperatives minimized disputes and strengthened unity. Likewise, Cohen and Shani (2023) observed that effective complaints-handling in Israel's kibbutz system enhanced farmers' loyalty. The findings also showed that timely resolution of complaints within 30 days (M = 3.89, SD = 0.95) and enforcement of disciplinary actions (M = 3.76, SD = 0.90) were moderately practiced. Maingi and Kobuthi (2024) found that accountability mechanisms and sanctions for misconduct improved SACCO governance in Nairobi, while Musau (2020) warned that weak enforcement practices undermine member trust and cooperative integrity.

Inferential Analysis

Inferential analysis was conducted to determine the relationship between income levels and dairy farmers' membership in cooperative societies. The analysis applied Pearson's correlation and simple linear regression to assess the strength, direction, and predictive power of income levels on cooperative membership among dairy farmers.

Correlation Analysis

The Pearson correlation coefficient was used to determine the relationship between income levels and dairy farmers' membership in cooperative societies. The results are presented in Table 2.

Table 2: Correlation Analysis

Variables	Dairy Farmers' Membership in Cooperative Societies	Income Levels
Dairy Farmers' Membership in Cooperative Societies	1	0.523**
Income Levels	0.523**	1

NB: ** $p < 0.01$ (2-tailed)

The results reveal a positive and statistically significant correlation ($r = 0.523$, $p < 0.01$) between income levels and dairy farmers' membership in cooperative societies. This suggests that higher income levels are associated with a greater likelihood of farmers joining and remaining active in cooperative societies. These findings align with those of Ekwere (2019) and Ali et al. (2024), who reported similar positive associations in agricultural contexts.

Regression Analysis

Simple linear regression analysis was carried out to determine the extent to which income levels predict dairy farmers' membership in cooperative societies. The model used was: $Y = \alpha + \beta X + \varepsilon$, where Y represents membership, X denotes income levels, and ε is the error term.

Table 3: Model Summary

Model	R	R^2	Std. Error of the Estimate
1	0.523	0.273	0.631

The model summary shows that income levels explain 27.3% ($R^2 = 0.273$) of the variation in dairy farmers' membership in cooperative societies. This indicates that income level is a significant predictor of membership, though other factors not captured in this model may also play a role.

Table 4: ANOVA

Model	Sum of Squares	df	Mean Square	Sig.
Regression	58.126	1	58.126	0.000**

The ANOVA results show that the regression model is statistically significant ($F = 58.126$, $p < 0.01$), indicating that income levels significantly influence dairy farmers' membership in cooperative societies.

Table 5: Regression Coefficients

Predictor	Unstandardized B	Std. Error	Beta	t	Sig.
Income Levels	0.215	0.053	0.234	4.057	0.000**

The regression coefficient for income levels ($\beta = 0.215$, $p < 0.01$) confirms that income levels significantly and positively predict dairy farmers' membership in cooperative societies. This implies that as farmers' income rises, their likelihood of joining and maintaining cooperative membership increases. This finding aligns with Ali et al. (2024), who observed that higher household income positively predicts cooperative participation in Zanzibar.

Final Regression Equation: $Y = 1.218 + 0.215X + \varepsilon$

In summary, income levels significantly influence dairy farmers' membership in cooperative societies, with results showing a positive correlation ($r = 0.523$) and a significant regression coefficient ($\beta = 0.215$, $p < 0.01$). These findings suggest that improving farmers' income stability can enhance cooperative participation, consistent with the conclusions of Ekwere (2019) and Gachara (2018).

CONCLUSION

Higher income levels serve as a key determinant of cooperative membership. Stable and predictable earnings increase farmers' ability to meet cooperative obligations, enhance trust, and foster long-term participation. While governance, regulation, and access to credit remain important, income stability emerges as a critical motivator for engagement and retention. These findings support Rational Choice Theory, demonstrating that farmers act to maximize economic utility when deciding to join cooperatives.

RECOMMENDATIONS

***Theoretical Value*:** The study reinforces Rational Choice Theory by linking income incentives directly to cooperative membership decisions, providing empirical support for economic decision-making models.

***Practical Value*:** Cooperatives should implement stable pricing schemes, timely bonuses, and transparent profit-sharing to enhance member loyalty. This ensures that members perceive tangible financial benefits from participation.

Policy Value: Policymakers should support income stability initiatives, such as guaranteed minimum milk prices or market linkages, to encourage cooperative participation and reduce poverty.

SUGGESTIONS FOR FURTHER RESEARCH

Future studies could examine the role of digital payment platforms and online cooperative management tools in enhancing members' income stability and participation. Additionally, research could explore socio-cultural factors, such as peer influence and community networks, in shaping cooperative membership decisions.

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