IJAAR PUBLISHING®

African Journal of Sustainable Agricultural Development | ISSN: 2714-4402
Vol. 6, Number 4 (2025) | www.ijaar.org/ajsad

ASSESSMENT OF GENDER AND SOCIO-ECONOMIC FACTORS INFLUENCING LEVEL OF PARTICIPATION ALONG BEEKEEPING ACTIVITIES IN SELECTED LGA OF KANO SOUTH, KANO STATE

Oyinloye, R.[1], Daneji, M.I.[2], Abdulwahab, F.S.[3], Abdul-Azeez, H.[4]

[1]Department of Agric. Extension and Management, Federal College of Agric. Produce Technology, Kano, PMB 3013, Kano State, Nigeria.
[2]Department of Agricultural Economics and Extension, Bayero University, Kano.PMB 3011, Kano State
[3]Department of Agricultural Economics and Extension, Aliko Dangote University of Science and Technology, Wudil, PMB 3244, Kano State.
[4]Department of Fisheries and Aquaculture, Bayero University, Kano, PMB3011, Kano State
[*]Corresponding author: rasheedat2007@gmail.com. +2348130472566

ABSTRACT

This study assessed participation levels in beekeeping activities including honey production, marketing, and processing focusing on gender, age (youth and elders), and socioeconomic factors. The field survey revealed that the beekeeping sector is characterized by a predominantly male demographic and a significant lack of youth involvement, raising concerns over the sustainability of traditional practices. The majority of participants, across both youth (85.7%) and elder (65.3%) groups, engaged in honey production on a part-time basis (67.9% overall), treating it as a supplementary income venture. Logistic regression for honey production was statistically significant (X^2 (12) = 70.3, $p < 0.05$), yet gender and most socioeconomic factors were not significant predictors ($p > 0.05$). However, education and major occupation showed the highest positive influence. Conversely, the honey marketing analysis (X^2 (10) = 48.3, $p < 0.05$) identified gender (OR = 17.651, $p = 0.030$), years of experience, and cooperative membership as significant factors. Elder involvement was positively associated with increased part-time marketing. In honey processing, all youth participated part-time (100%), while elders were split, suggesting youth prioritize income diversification. Overall, the beekeeping sector is male-dominated with low female and youth participation, primarily constrained by cultural norms, the perceived risks (e.g., bee stings), and extensive domestic responsibilities such as child-rearing that restrict female engagement. While male dominance persists, notable youth and female engagement was observed in the marketing and processing segments of the value chain.

Keywords: Apiary, Apiculture, Honey, Marketer, Value-chain, Processor, Producer and Regression

Oyinloye, R., Daneji, M.I., Abdulwahab, F.S. & Abdul-Azeez, H. (2025). Assessment of Gender and Socio-Economic Factors Influencing Level of Participation Along Beekeeping Activities in Selected LGA of Kano South, Kano State. *African Journal of Sustainable Agricultural Development. 6*(4), 66-76. DOI: https://doi.org/10.5281/zenodo.18084466

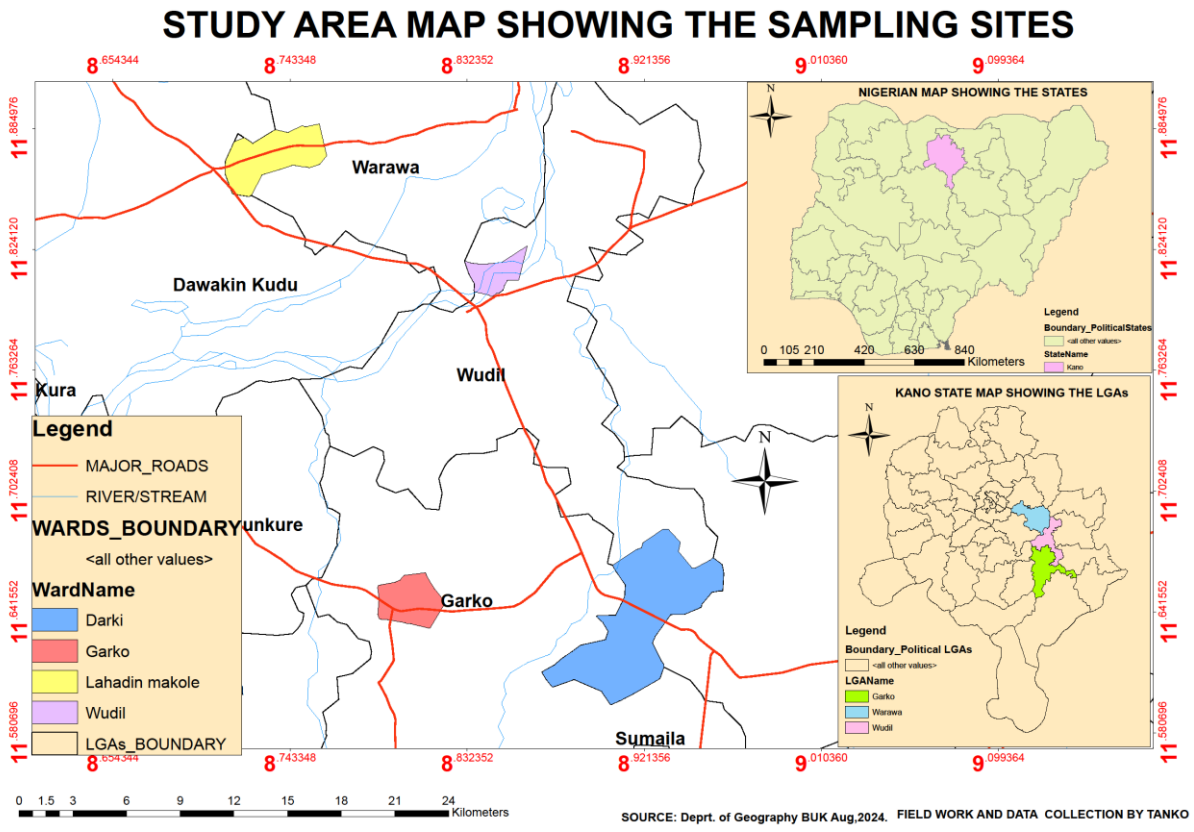
INTRODUCTION

Apiculture remains one of the most productive resources that has not been earnestly tapped in Nigeria due to enthusiasm towards beekeeping and lack of apicultural knowledge (Ayansola, 2012). Beekeeping is a vital agricultural activity that contributes significantly to poverty alleviation, food security, and environmental conservation in Nigeria (Ajao et al., 2018). In Kano State, beekeeping has been identified as a potential source of income for rural communities, particularly women and youth (Muhammad et al., 2015). However, despite its potential, the level of participation in beekeeping activities remains low, and there is a dearth of information on the factors influencing participation, particularly in relation to gender and socio-economic characteristics.

This study aims to assess the gender and socio-economic factors influencing the level of participation in beekeeping activities in selected Local Government Areas (LGAs) of Kano South, Kano State. The research question focuses mainly on: What are the socio-economic factors influencing level of gender participation in beekeeping activities in the study areas? Specifically, the study seeks to identify the socio-economic characteristics of beekeepers, examine the level of participation in beekeeping activities, and determine the constraints to participation in beekeeping activities.

Study Area

The study was conducted in three purposively selected local governments of Kano South: Garko, Wudil and Dawakin kudu chosen for their agricultural significances in Kano State. Located in Nigeria's North –West Zone which is the country's most populous state with an estimated over 15 million people as of 2022 and a land area of about 20.230km^2. Vegetation of the state ranges from wooded savanna in the south to shrub vegetation in the North, with annual rainfall between 800mm and 1000mmand temperature averaging 26^{0}C to 33^{0}C (Dauda *et. al*. 2019),



Sampling Technique and Sample Size

The study employed a multistage sampling procedure. In the first stage, the Purposive selection of three Local Government areas base on their prominence in beekeeping activities, they are: Dawakin Kudu, Wudil and Garko. Secondly, Four Villages and markets that were actively participating in these activities (production, processing and marketing of beekeeping activities) were selected from the Local Government areas listed above. Those villages and their markets are: (Lahadin Makole, Darki, Wudil and Garko). They were selected for their prominence in honey bee production, processing and marketing in Kano State. Lastly, producers, processors and marketers were randomly selected based on their sample frame. The sample size of the selected study area is stated below. Total number of 179 respondents were selected based on the sample frame at 35%. Each selected respondents from the study area were based on this 35% and is illustrated below:

Table 1: Sample frame and sample size of the actors in beekeeping activities

Study Area	Respondents	Sampling Frame/Population Size	Sample Size (35%)
Darki	Producers	56	20
	Processors	50	18
	Marketers	100	35
Wudil	Producers	30	11
	Processors	20	7
	Marketers	50	18
Garko	Producers	50	18
	Processors	50	18
	Marketers	40	14
Makole	Producers	20	7
	Processors	20	7
	Marketers	15	6
Total		501	179

Source: Field survey, 2024

Method of Data collection

Well-structured questionnaire was used as instrument of primary data collection and addressed to key actors in the beekeeping activities (producers, processors, marketers).The total number of the respondents distributed this questionnaires to were 179. Enumerators were recruited and trained on the techniques of data collection. They were taken through the objective of the study and content of the questionnaire. A pre-test was conducted under the supervision of the researcher. Adjustments was made, when necessary, on the questionnaire and the final data collection was closely supervised to ensure quality data collection.

Method of Data Analysis:

Inferential statistics (Binary logistic regressions were used to quantify the Socio-economic characteristics that influences gender level of participation in Beekeeping activities. The binary logistic regression was used to examine the factors influencing the observed differences in their level of participation in the study areas. Various key variables such as marital status (dummy variable), years of experience, membership of cooperative, Household size, access to extension service, educational level, gender of the respondent were used as independent variables in the regression models to determine their influences on the production, processing and marketing activities while the gender level of participation (full time and part time were the variables used in dependent variables.

The regression model is stated below:

$Y = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5\ldots\ldots\ldots\ldots + \beta7X7$

Where Level of participation = 0 for Part-time, 1 for fulltime

- Y is the dependent variable=Respondent level of participation (full time and part time)
- α is the intercept= constant.
- $\beta1, \beta2, \beta3, \beta4, \beta5\ldots\ldots \beta7$ = coefficients of independent variable.
- X1= gender of the respondent
- X2= Marital status (1 if married, 0 otherwise).

- X3= Household size(numbers)
- X4= Education status (primary, secondary, tertiary and non-formal)
- X5= years of experience(years),
- X6= Access to extension service
- X7= membership of cooperative society

Inferences were drawn based on the econometric criteria such as sign of the coefficient, R2 value, F-Value, T-value and the significance levels of the independence variables.

RESULT AND DISCUSSION

The result from the table below highlights the participation levels of youth and elders in honey bee production. The majority (85.7%) of respondents were part-time participants, with 85.7% of youths and 65.3% of elders engaged in beekeeping on a part-time basis. This finding demonstrates a clear preference for part-time involvement across both age groups, likely due to commitments to other economic activities or responsibilities. Beekeeping, being a non-land-based agricultural activity, does not compete for space with other farming practices. This makes it a viable supplementary venture for rural dwellers, supporting business diversification (Khan and Khan, 2018). These results align with the study by Ukanyirioha *et al* (2022), They reported significant youth participation in apiary activities in Sanga Local Government Area of Kaduna State, Nigeria, where beekeeping was often combined with other occupations such as farming.

Table 2: The level of participation of gender in honey bee production activities

Gender	Level of participation		Total
	Full time N (%)	Part time N (%)	
Youth (N=7)	1(14.3%)	6(85.7%)	7(100%)
Elder (N=49)	17(34.7%)	32(65.3%)	49(100%)
Total	18(32.1%)	38(67.9%)	56(100%)

Source: Field survey, 2024.

The results of the logistic regression model, used to analyze the influence of gender and other socio-economic factors on participants' level of involvement in honey production, are presented in Table .below. The model was statistically significant X^2 (12) = 70.3, $p < 0.05$) and demonstrated a perfect fit, explaining 100% of the variation in participation levels (Nagelkerke R^2= 99.9) predicting 67.9% of the cases. However, gender and all other socioeconomic characteristics showed no significant influence ($p > 0.05$) on part-time participation in honey bee production. Despite the lack of statistical significance, educational status (Odds Ratio [OR] + = 4.745E+138) and major occupation (OR = 7555722639.473), had the highest positive influence on part-time involvement in beekeeping. This suggests that as educational level increases, the availability of youth may lead to higher partial participation in honey production. This observation aligns with that of (Adams, 2014), who noted that Education has a positive impact in agricultural productivity of rural farmers. Additionally, the tendency to treat honey production as a secondary occupation could reduce the level of involvement, as primary occupations take priority. This finding is consistent with that of Kubkomawa *et al.* (2021), who reported that beekeeping in rural areas is often combined with other agricultural ventures. Furthermore, the traditional nature of beekeeping, with its seasonal constraints and risks, encourages many participants to treat it as a part-time business (Khan and Khan, 2018).

Table 3: Factors influencing varying level of participation in beekeeping

Variable		B	S.E.	OR	Sig.
Constant	A	-2.803	180447.669	0.00	1.000
Gender of the respondent (0 for youth, 1 for Elders……)	X1	-6.803	158690.493	0.001	1.000
Marital Status (1for single, 2for married)	X2	-17.603	46657.308	0.00	1.000
Household size (1, 2, 3, …)	X3	4.259	895.455	70.766	0.996
Education Level (1 for no formal, 2 for primary, 3 for secondary and 4 for tertiary)	X4	-2.128	23507.756	0.119	1.000
Years of experience (1, 2, 3, 4 …)	X5	-1.904	1586.241	0.149	0.999
Access to extension Service (1 for yes, 2 no)	X6	-4.080	43193.621	0.000	1.000
Major occupation (1 for farming, 2 for business, 3 for honey marketing and 4 for honey production	X7	-6.803	158690.493	0.001	1.000

Source: Field survey, 2024

The result from the table below provides an overview of gender participation levels in honey marketing. Among youths, gender participation was nearly balanced between full-time (48.7%) and part-time (51.3%) engagement in honey marketing. In contrast, elders were more involved in part-time honey marketing (61.8%) compared to full-time participation (38.2%).These results reveal a stronger inclination toward part-time participation across both genders, with elders showing a greater preference for part-time honey marketing compared to youths. This pattern reflects the typical practice in rural Nigeria, where honey-related activities are viewed as supplementary income-generating ventures rather than primary sources of livelihood. The findings are consistent with that of (Mwakatobe *et al.*, 2016), who reported similar trends in rural Tanzania, where honey marketing demonstrated significant participation among youths and was integrated with other income-generating activities.

Table 4: The level of participation of gender in honey marketing activities

Gender	Level of participation		Total
	Full time N (%)	Part time N (%)	
Youth (N=39)	19(48.7%)	20(51.3%)	39(100%)
Elder (N=34)	13(38.2%)	21(61.8%)	34(100%)
Total	32(43.8%)	41(61.8%)	73(100%)

Source: field survey, 2024

The regression model used to evaluate the influence of gender and other socioeconomic characteristics on participants' level of participation in honey marketing is summarized in the table below. The model was statistically significant $X^2(10) = 48.3$, $p < 0.05$), explaining 64.6% of the variation in participation levels (Nagelkerke R^2) and correctly predicting 80.8% of the cases. Marital status (OR = 0.000), educational level (OR = 0.680), household size (OR = 1.214), and access to extension services (OR = 0.678) were not found to significantly influence ($p > 0.05$) participation levels. However, years of experience (OR = 0.754, $p = 0.001$), membership in a cooperative (OR = 0.007, $p = 0.000$), and gender (OR = 17.651, $p = 0.030$) were significant factors ($p < 0.05$).The findings suggest that an increase in years of experience in honey marketing is associated with a decrease in part-time participation ($\beta = -0.282$). Similarly, membership in a cooperative society reduces part-time participation ($\beta = -4.935$). Conversely, elder involvement in honey marketing is linked to an increase in part-time participation ($\beta = 2.871$). These results align with that of Chiemie (2022), who reported that beekeeping in rural communities is predominantly practiced in a traditional manner. This could mean that youths are typically introduced to honey marketing at an early age, while parents focus on other agricultural activities to diversify family income sources.

Table 5: Factors influencing level of participation in honey marketing

Variable		B	S.E.	OR	Sig.
Constant	A	21.387	23903.960	1942205067.848	0.999
Gender (0 for youth and 1 for elder)	X1	2.871	1.326	17.651	0.030
Marital Status (1 for single, 2 for married)	X2	-19.357	23903.960	0.000	0.999
Household size (1, 2, 3, ……)	X3	0.194	.111	1.214	0.081
Education Level (1 for no formal,2 for primary, 3 for secondary and 4 for tertiary)	X4	-385	1.266	0.680	0.761
Years of experience (1, 2, 3, 4 …)	X5	-282	0.088	0.754	0.001

Access to extension Service (1 for yes, 2 no)	X6	-0.389	.853	0.678	0.648
Membership of cooperative (1 for yes, 2 for no)	X7	-4.935	1.337	0.007	0.000

Source: field survey, 2024.

The participation levels of youth and elder respondents in honey processing businesses within the study area is summarized below. All youth respondents were involved in honey processing on a part-time basis, while elders displayed nearly equal participation in full-time and part-time roles. This indicates that most youths are more engaged in other income-generating activities than honey processing, whereas elders are more likely to commit to the business full-time. Youths, being energetic and resourceful, tend to diversify their livelihoods by engaging in multiple ventures to boost their income. In contrast, elders often focus on nearby and familiar activities like honey processing. These findings align with that of Kaboré *et al* (2022), who observed that beekeeping in rural communities of Burkina Faso serves as a means of business diversification for rural farmers, with higher youth participation compared to elders.

Table 6: The level of participation of gender in honey processing activities

Gender	Level of participation		Total
	Full time N (%)	Part time N(%)	
Youth (N=39)		9(100%)	9(100%)
Elder (N=34)	20(48.8%)	21(51.2%)	34(100%)
Total	20(40%)	30(60%)	50(100%)

Source: field survey, 2024.

The regression model used to evaluate the influence of gender and other socioeconomic characteristics on participation levels in honey processing is discussed below. The model was statistically significant X^2 (13) = 41.4, $p < 0.05$), explaining 76.2% of the variation in participation levels (Nagelkerke R^2) and correctly predicting 86.0% of the cases. While gender and other socioeconomic characteristics did not have a statistically significant influence ($p > 0.05$) on part-time participation in honey processing, marital status (OR = 1.21E+5) and cooperative membership (OR = 93009.525) showed the highest positive influence, despite not being significant. This suggests that married individuals are more likely to engage in honey processing as a livelihood venture compared to single individuals. These findings align with Kaboré *et al* (2022), who reported that married individuals are more actively involved in beekeeping activities due to the responsibility of providing for their families. Similarly, cooperative membership appears to encourage participation in honey processing. In this case, this study found growing awareness among rural farmers in Nigeria of the importance of teamwork and the benefits of cooperative group formation, as also observed by Kaboré *et al* (2022) on the socioeconomic and technical aspects of beekeeping in Burkina Faso.

Table 7: Factors influencing level of participation in honey processing.

Variable		B	S.E.	OR	Sig.
Constant	A	-31.318	26447.526	0.000	0.999
Gender (0 for youth and 1 for elder)	X1	43.061	19404.130	5023256754036724700.00	0.998
Marital Status (1 for single,2 for married)	X2	34.603	34379.503	1065924935856664.800	0.999
Household size (1, 2, 3, ……)	X3	0.343	0.227	1.410	0.130
Education Level (1 for no formal, 2 for primary, 3 for secondary and 4 for tertiary)	X4	14.892	8943.351	2934900.457	0.999
Years of experience (1, 2, 3, 4 …)	X5	0.246	0.179	1.279	0.169
Access to extension Service (1 for yes, 2 no)	X6	-33.000	13215.740	21.889	0.135
Membership of cooperative (1 for yes, 2 for no)	X7	3.588	2.373	36.146	0.131

Source: field survey, 2024

Conclusion

The socio-economic analysis of honey producers across the four study areas reveals a male-dominated industry with limited youth involvement. Female participation remains low, primarily due to cultural norms, the risks associated with bee stings, and domestic responsibilities such as household chores and child-rearing. Youth participation is also minimal, likely stemming from low productivity levels in traditional apiaries and the associated risks. A similar pattern of male dominance is evident among honey processors and marketers; however, there is notable female and youth engagement in honey processing and marketing activities. While men predominantly lead in honey production, women actively participate in bee wax processing for baits. This involvement provides a reliable source of job creation and income generation for rural women, as honey processing can be easily integrated with their domestic duties.

Recommendations:
Based on the study, the following recommendations are made:

1. Collaboration with Stakeholders
Enhancing marketing opportunities and exploring export possibilities require collaboration among various stakeholders. This includes producers, processors, marketers, village heads, youth leaders (both men and women), and extension agents. A united effort will significantly boost the sector and create new avenues for growth.

2. Encourage Women and Youth Participation
Promoting modern apiary techniques and integrating information technology into marketing strategies can foster greater involvement from women and youth. Extension services can leverage social media platforms to disseminate knowledge and encourage participation. Non-governmental organizations can also play a vital role by providing training specifically tailored for these groups.

3. Gender Involvement in Beekeeping
To address cultural barriers that hinder women's participation in beekeeping, it is essential to engage with opinion leaders, community heads, and religious leaders through a series of meetings. Educating men on the importance of women's empowerment within the household can foster support for their participation in this industry. Encouraging both women and youth to enter this field is crucial for its growth.

REFERENCES

Adams, F. and O.-Y. K. (2014). Socio-economic Characteristics of Subsistent Small Ruminant Farmers in Three Regions of Northern Ghana. *Asian Journal of Applied Science and Engineering.*, *3*, 351-364.

Ajao, A. M., Oladimeji, Y. U., & Idowu, A. E. (2018). Economic analysis of beekeeping in Nigeria: A review. Journal of Agricultural Economics and Rural Development, 6(1), 1-10

Akpan, A. A., et al. (2018). *Gender-based division of labor in traditional beekeeping practices in Akwa Ibom State, Nigeria.* International Journal of Agricultural Extension and Rural Development, 6(4), 112-120

Dauda, A. M., Nasiru, A., & Suleiman, M. (2019). The impact of some agricultural practices on population status of honey bee, Apis mellifera L. in Katsina State, Nigeria. *International Journal of Entomology Research*, *4*(2), 32–35. %3CGo%0Ato

Kaboré, B. A., Dahourou, L. D., Ossebi, W., Niangoran S.B.A., Traore, A. B. (2022). Socioeconomic and technical characterization of beekeeping in Burkina Faso: case of the Center-West Region. *Tropicaux, Revue d'Elevage et de Médecine Vétérinaire Des Pays*.

Khan, N. and Khan, W. (2018). Review of past literature of Honey Beekeeping and its production in Rural area of the world. *Food Science and Quallity Management*, *74*.

Kubkomawa, H. I., Mohammed, A. S. A., Kenneth-Chukwu, O. M., & Iyiola, V. O. and Anyanwu, V. C. (2021). Apiculture (Beekeeping), an Easy Economic Venture Irrespective of Age, Gender, Religion and Profession. *International Journal of Applied Agricultural Sciences*, *7*(4), 169. https://doi.org/10.11648/j.ijaas.20210704.15

Mwakatobe, AR., Ntalwila, J., Kohi, E., & Kipemba, N., Mrisha, C. (2016). Income generation promote the participation of youth and women in beekeeping activities in Western Tanzania. *~ 718 ~ Journal of Entomology and Zoology Studies*, *4*(4), 718–721.

Ukanyirioha, C.J., Erhabor, T.A., Yakubu, C.K., Shoyemi, A.O, Olori-Oke, O. (2022). Constraints and socio economic determinants of beekeeping in Sanga Local Government area of Kaduna state,Nigeria. *Journal of Forestry Research and Management*, *19*(1), 50–56.