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Effect of livelihood diversification on arable crop farmers' household wellbeing in Southwestern, Nigeria

¹SADIQ Musiala Muiyiwa, ²AJUWON Ibrahim Opeyemi and ³RAHEEM Wasiu Kolawole

^{1,3} Department of Agricultural Extension and Management, Oyo State College of Agriculture and Technology, Igboora, Oyo State, Nigeria

² Department of Agricultural Technology, Oyo State College of Agriculture and Technology, Igboora, Oyo State, Nigeria

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Corresponding Author: AJUWON Ibrahim Opeyemi

Abstract

Livelihood diversification has become an important strategy for improving rural household wellbeing and reducing vulnerability among arable crop farmers in developing countries. This study examined the effect of livelihood diversification on arable crop farmers' household wellbeing in Southwestern Nigeria. A multistage sampling procedure was used to select 281 arable crop farmers from Oyo and Ogun States. Data was collected using structured interview guide and analyzed using descriptive statistics, weighted mean scores, Chi-square, and Pearson Product Moment Correlation at 5% significance level. Respondents had a mean age of 45.5 years, with 96.8% being male and an average household size of 8 persons. Major livelihood diversification activities included charcoal production (58.29%), selling foodstuff (54.27%), artisan work (54.27%), and selling firewood (54.27%). Climate and weather unpredictability (80.78%), non-access to market (80.78%), and crop failure (73.31%) were the major factors influencing diversification. Livelihood diversification positively influenced stable income ($\text{armathbf}x=3.44$), improved social status ($\text{armathrm}x=3.22$), reduced rural-urban migration ($\text{armathrm}x=3.16$), and improved lifestyle ($\bar{x}=3.15$). Major challenges included limited access to education left ($\text{armathbf}x=2.89$), inadequate capital ($\bar{x}=2.65$), insecurity ($\text{armathrm}x=2.52$), and poor access to information and technology ($\text{armathbf}x=2.43$). Pearson correlation analysis revealed significant relationships between income ($\text{mathrm}r=0.411$), household size ($\text{mathrm}r=0.283$), farming experience ($\text{mathrm}r=0.227$), challenges ($\text{mathrm}r=0.305$), and livelihood diversification ($\text{mathrm}p<0.05$). The study concludes that livelihood diversification improves household wellbeing among arable crop farmers and recommends improved access to credit, extension services, entrepreneurial training, and rural infrastructure to enhance sustainable livelihood diversification.

Keywords: Arable crop farmers, livelihood diversification, household wellbeing, rural households

Introduction

Agriculture remains a key livelihood activity in Southwestern Nigeria, where arable crop farming supports food production, employment, and household income. However, the sustainability of smallholder farming systems has been increasingly constrained by land degradation, climate variability, rising input costs, insecurity, and limited access to modern agricultural support services. These challenges have reduced farm productivity and increased income instability, thereby affecting household wellbeing. Within the Sustainable Livelihoods Framework, rural households operate under a vulnerability context and rely on available livelihood assets to pursue strategies that enhance welfare outcomes. In this regard, livelihood diversification has become a major adaptive strategy. It involves engagement in multiple income-generating activities across farm and non-farm sectors to reduce risk, stabilize income, and improve welfare outcomes. In Southwestern Nigeria, arable crop farmers commonly combine farming with petty trading, wage labour, artisanal work, transport services, and small-scale enterprises as coping mechanisms against agricultural uncertainty (Adeomi, Fadoju, Oseni and Ogunya, 2022) [2].

Empirical studies show that socioeconomic characteristics such as age, education, household size, farm size, and access to credit significantly influence participation in livelihood diversification, with implications for household welfare outcomes (Chinalurum *et al.*, 2024) [4]. Similarly, diversification has been associated with improved income stability, resilience, and food security among rural households in Southwestern Nigeria (Olawuyi & Olawuyi, 2022) [11]. Household wellbeing in this study refers to multidimensional welfare outcomes, including income stability, food security, health status, educational attainment, asset ownership, and access to basic services, as well as the capacity to cope with shocks and maintain living standards over time. However, the welfare effects of livelihood diversification vary across households depending on the type of activities undertaken and resource endowment. While some households experience significant welfare improvements, others remain engaged in low-return activities with limited impact on wellbeing. Existing studies have largely focused on determinants or income effects, with limited integrated evidence on how diversification influences multidimensional household wellbeing among arable crop farmers in Southwestern Nigeria.

Against this background, this study examines the effect of livelihood diversification on the household wellbeing of arable crop farmers in Southwestern Nigeria. Specifically, it describes the socioeconomic characteristics of respondents, identifies diversification activities, assesses their impact on household wellbeing, and examines the constraints associated with diversification. In line with the research objectives, the study further tests the following null hypotheses:

- **H₀₁:** There is no significant relationship between selected socioeconomic characteristics and the effect of livelihood diversification on the household wellbeing of arable crop farmers in the study area.
- **H₀₂:** There is no significant relationship between the challenges associated with livelihood diversification and the effect of livelihood diversification on the household wellbeing of arable crop farmers in the study area.

Methodology

The study was conducted in Southwestern Nigeria, a region characterized by a tropical climate with distinct wet and dry seasons and suitable for the cultivation of major arable crops such as maize, cassava, yam, okra, and vegetables. The target population comprised all arable crop farmers cultivating these crops within the region. A multistage sampling procedure was used to obtain a representative sample. Thirty percent of the states in Southwestern Nigeria were randomly selected, resulting in the inclusion of Ogun and Oyo States. Fifty percent of the Agricultural Development Programme (ADP) zones in each selected state were then randomly chosen, followed by 25% of blocks within the selected zones and 50% of cells within the selected blocks. From the 235 farmer groups identified across the selected cells, 20% (47 groups) were randomly selected. Finally, 20% of registered farmers in each selected group were sampled, yielding a total of 281 respondents. Primary data were collected using a structured interview schedule that captured socioeconomic characteristics, livelihood diversification activities, factors influencing diversification, perceived effects on household wellbeing, and challenges associated with diversification. Socioeconomic variables such as age, sex, marital status, education, household size, farm size, farming experience, and income were measured using natural units and categorical classifications. Participation in diversification activities was recorded using binary responses, while factors influencing diversification and the associated challenges were measured using a two-point and a three-point scale respectively. Perceived effects on household wellbeing were assessed using a five-point Likert scale, and challenges were measured using a three-point severity scale. Weighted mean scores were computed to rank factors, effects, and challenges.

Data were analyzed using descriptive statistics (frequency,

percentage, mean, and standard deviation) and inferential statistics, including Chi-square tests and Pearson Product Moment Correlation (PPMC), with significance set at $p \leq 0.05$.

Although the study assessed household wellbeing using perception-based Likert items, this approach is widely accepted in contemporary livelihood and wellbeing research, particularly where multidimensional welfare outcomes include subjective and experiential components (Tessema & Simane, 2020; Nguyen & Nguyen, 2022) ^[9, 13]. The study strengthened these subjective measures by incorporating objective socioeconomic indicators such as income, household size, farm size, and farming experience into the correlation analysis. While self-report bias and endogeneity are inherent limitations of cross-sectional perception studies, the analytical framework adopted here is appropriate for exploratory research aimed at identifying significant associations rather than establishing causality (Alemu, 2023; Habib *et al.*, 2023) ^[7, 3]. These limitations are acknowledged, and future studies are encouraged to employ longitudinal data or econometric models to better isolate causal effects.

Socio-economic characteristics of the respondents

Results in Table 1 show the socio-economic characteristics of the respondents. The result shows that arable crop farming in Southwestern Nigeria is dominated by middle-aged respondents, with a mean age of 45.5 years, suggesting a relatively active but ageing farming population. This age structure implies a strong need for income stability, which supports engagement in livelihood diversification, as also noted by Olawuyi and Olawuyi (2022) ^[11]. The overwhelming dominance of males (96.80%) reflects the gendered nature of arable crop farming and suggests limited female participation in primary farming activities, although women may still engage more in non-farm income activities. Household sizes are relatively large (mean = 8), indicating availability of family labour but also higher consumption pressure, which often drives diversification decisions, consistent with Chinalurum, Ojoko, and Junaidu (2024) ^[4]. Low educational attainment (over 80% with no or primary education) suggests restricted access to high-return non-farm employment, pushing households toward informal activities such as trading and artisan work. This pattern is consistent with Adeomi *et al.* (2022) ^[2]. Income levels are generally low (mean ₦46,450), indicating economic vulnerability and reinforcing the need for livelihood diversification as a coping strategy, as also observed by Adeniyi, Ademola, Alabi, and Busari (2023) ^[1]. The findings suggest that livelihood diversification in the study area is largely driven by economic necessity rather than opportunity, with most households engaging in low-return informal activities that may have limited effects on long-term welfare improvement.

Table 1: Socio-Economic Characteristics of Respondents

Variable	Frequency	Percentage (%)	Mean
Age (years)			45.5
20 - 29	14	4.98	
30 - 39	63	22.42	
40 - 49	107	38.08	

≥ 50	97	34.52	
Sex			
Male	272	96.80	
Female	9	3.20	
Marital status			
Single	54	19.22	
Married	150	53.38	
Widow	49	17.44	
Divorced	28	9.96	
Education			
No formal education	108	38.43	
Primary education	122	43.42	
Secondary education	51	18.15	
Household size			8
1 - 5	99	35.23	
6 - 10	171	60.85	
11 and above	11	3.91	
Secondary occupation			
Artisan	82	29.18	
Trading	159	56.58	
Processing	40	14.23	
Income (₦)			46,450.00
Below 50,000	178	63.35	
50,001 - 100,000	56	19.93	
100,001 - 500,000	35	12.46	
> 500,000	12	4.27	

Source: Field survey, 2026

Table 2: Factors influencing livelihood diversification by arable farmers

The results in Table 2 indicate that livelihood diversification among arable crop farmers is predominantly driven by risk exposure, structural constraints, and livelihood insecurity, rather than purely income-expansion motives. The most influential factors include climate and weather variability (80.78%), non-access to market (80.78%), and demographic characteristics (79.00%), followed by crop failure (73.31%) and unstable government policies (60.14%). This pattern suggests that diversification is largely a coping and survival strategy adopted in response to agricultural uncertainty, weak market systems, and limited institutional support. Constraints such as poor access to resources (54.09%), marketing inefficiencies (51.96%), and limited technological advancement (51.60%) further reinforce the vulnerability context of rural farming livelihoods. Although income improvement (50.18%) and community development (56.58%) were acknowledged, they appear to be secondary to distress-related motivations.

These findings imply that arable crop farmers are primarily “push-diversified,” meaning that diversification is induced more by necessity than opportunity. This aligns with the Sustainable Livelihood Framework, which posits that households diversify income sources as a response to shocks, seasonality, and structural constraints to stabilize consumption and reduce vulnerability. This interpretation is strongly supported by recent empirical evidence from Nigeria. For instance, Onuwa *et al.* (2022) ^[12] found that livelihood diversification among rural farmers in Plateau State is significantly influenced by socioeconomic constraints and vulnerability conditions, concluding that diversification is largely a response to limited farm productivity and structural rural challenges rather than voluntary economic expansion. In addition, Olawuyi and Olawuyi (2022) ^[11] established that livelihood diversification in South-West Nigeria serves as a risk-buffering mechanism against climatic, economic, and institutional shocks, thereby enhancing household resilience under unstable agricultural conditions.

Table 2: Factors influencing livelihood diversification by arable crop farmers

S/N	Factors	Agreed	Agreed
		Frequency	Percentage
1	Additional income for local projects thus leading to community development	159	(56.58)
2	To improve arable crop farmer's condition of living	141	(50.18)
3	Marketing conditions such as poor demand, price	146	(51.96)
4	Climate and weather that are unpredictable	227	(80.78)
5	Non-access to resources	152	(54.09)
6	Technological advancement	145	(51.60)
7	Unstable government policies	169	(60.14)
8	Socio-cultural dynamics	122	(43.42)
9	Demographic factors (age, sex, education, household composition)	222	79.00)
10	Non-access to market	227	(80.78)
11	Crop failures	206	(73.31)
12	Knowledge and skills in non-agricultural activities	178	(63.35)
13	Social networks and support system	141	(50.18)

Source: Field survey, 2026

Table 3: Effects of livelihood diversification on arable crop farmers

The weighted mean scores (WMS) show the extent to which livelihood diversification impacts household wellbeing, with higher values indicating stronger positive effects. The highest-ranked impact, stable income ($\bar{x} = 3.44$), implies that livelihood diversification plays a major role in income smoothing and reducing vulnerability to shocks. This suggests that engaging in multiple activities helps farmers cope with seasonal fluctuations and uncertainties in agriculture. This finding agrees with Alemu (2023) [3], who found that diversification significantly improves income stability and overall household welfare. The relatively high WMS for improved social status (3.22) and reduced rural-urban migration (3.16) indicates that diversification enhances social recognition and reduces the need for migration by creating alternative income opportunities locally. This implies that diversification contributes to rural retention and community stability. Similarly, Habib *et al.* (2023) [7] noted that diversified livelihoods strengthen social capital and reduce economic pressures that drive migration. The WMS values for improved lifestyle (3.15), social networks (3.15), and social mobility (3.14) suggest moderate positive effects on living standards and social wellbeing. This implies that diversification not only

improves income but also enhances household consumption, relationships, and opportunities for advancement. This is consistent with Kassegn and Abdinasir (2023) [8], who reported that livelihood diversification improves both economic and social dimensions of wellbeing. However, lower WMS values for financial security (3.00), financial stability (2.90), and resource management (2.88) indicate that while diversification provides income, it does not fully guarantee long-term financial strength or efficient resource use. This suggests that diversification activities may be low-return or unstable, limiting their ability to build wealth. More notably, the lowest-ranked impacts food security (2.69) and community engagement (2.58) imply that diversification has limited effect on improving nutrition and participation in decision-making. This indicates that diversification alone is insufficient to address deeper welfare issues without complementary support such as improved agricultural productivity and institutional inclusion.

Table 7: Summary of Pearson Correlation analysis showing the relationship between the challenges associated with livelihood diversification on arable crop farmers' households and the effect of livelihood diversification on arable crop farmers' household wellbeing in the study area

Table 3: Diversification Challenges and Wellbeing

S/N	Impacts	SA	A	U	D	SD	WMS	Rank
1	Stable income	68 (24.2)	91 (32.4)	0 (0.0)	71 (25.3)	51 (18.1)	3.44	1st
2	Improved social status reputation	71 (25.3)	67 (23.8)	45 (16.0)	51 (18.1)	47 (16.7)	3.22	2nd
3	Reduced level of migration in rural areas	71 (25.3)	67 (23.8)	33 (11.7)	59 (21.0)	51 (18.1)	3.16	3rd
4	Changes in lifestyle patterns by improving what household can afford	71 (25.3)	65 (23.1)	33 (11.7)	59 (21.0)	53 (18.9)	3.15	4th
5	Enhanced social networks and community connections	59 (21.0)	53 (18.9)	71 (25.3)	65 (23.1)	33 (11.7)	3.15	5th
6	Greater social mobility and opportunity for upward advancement	68 (24.2)	70 (24.9)	33 (11.7)	58 (20.6)	52 (18.5)	3.14	6th
7	Financial security	58 (20.6)	70 (24.9)	33 (11.7)	55 (19.6)	65 (23.1)	3.00	7th
8	Improved financial stability	20 (7.1)	73 (26.0)	60 (21.4)	53 (18.9)	75 (26.7)	2.90	8th
9	It encourages resource management	51 (18.1)	70 (24.9)	21 (7.5)	70 (24.9)	69 (24.6)	2.88	9th
10	It leads to food security	33 (11.7)	55 (19.6)	59 (21.0)	63 (22.4)	71 (25.3)	2.69	10th
11	Increased community engagement and decision-making process	21 (7.5)	56 (19.9)	65 (23.1)	59 (21.0)	80 (28.5)	2.58	11th

Source: Field Survey, 2026

SA- Strongly agree, A- Agree, U- Undecided, D- Disagree, and SD- Strongly disagree

The figures in parentheses are percentages WMS- Weighted mean score

Table 4: Various livelihood diversification engaged in by arable crop farmers

Results in Table 4 show the various livelihood diversification engaged in by arable crop farmers in the study area. The results indicate that arable crop farmers in Southwestern Nigeria engage in a wide range of livelihood diversification activities, with charcoal production (58.29%), selling of food items (54.27%), artisanal work (54.27%), and firewood sales (54.27%) being the most dominant. This pattern suggests that livelihood diversification in the study area is largely driven by informal, low-capital, and natural-resource-based activities, rather than formal or skill-intensive employment. The high

engagement in activities such as charcoal production and firewood sales implies a strong dependence on environmental resources as safety nets against agricultural income instability. While these activities provide quick income support, they are typically associated with low entry barriers and limited long-term income stability. This finding aligns with Olawuyi and Olawuyi (2022) [11], who reported that rural households in Southwestern Nigeria diversify mainly into informal non-farm activities as a coping strategy to manage income shocks and food insecurity. Similarly, the prominence of trading, artisanal work, and transportation-related activities reflects the tendency of rural households to engage in labour-intensive and small-scale enterprises that require minimal capital investment. This supports the findings of Adeomi *et al* (2022) [12], who observed that livelihood diversification among rural farming households is largely shaped by limited access to productive capital and is concentrated in low-return informal sector activities. The

findings imply that although livelihood diversification is widely practiced among arable crop farmers in the study

area, it is predominantly survival-oriented rather than investment-driven.

Table 4: Various livelihood diversification engaged in by arable crop farmers

S/N	Statements	Yes	Yes
		Frequency	Percentage
1	Livestock rearing	89	31.75
2	Cultivation of permanent crop	96	34.12
3	Selling of food stuff	152	54.27
4	Bee keeping	99	35.07
5	Transportation business	96	34.12
6	Artisan	152	54.27
7	Selling of firewood	152	54.27
8	Charcoal production	164	58.29
9	Loading & offloading of farm produce	129	45.73

Source: Field survey, 2026

Table 5: Challenges associated with livelihood diversification on arable crop farmers

Results in Table 5 show the challenges associated with livelihood diversification on arable crop farmers. The weighted mean scores show that limited access to education (WMS = 2.89) and inadequate capital (WMS = 2.65) are the most serious constraints, implying that lack of skills and financial resources strongly limit effective livelihood diversification. This supports findings by Habib *et al.* (2023), who reported that human and financial capital are critical determinants of successful diversification in rural households. The relatively high WMS for insecurity (2.52) [7] and limited access to information and technology (2.43) suggests that environmental and institutional barriers also restrict diversification opportunities, indicating that farmers operate under risky and poorly supported conditions.

Similarly, Kassegn and Abdinasir (2023) [8] found that lack of access to information, infrastructure, and secure environments reduces the ability of farmers to diversify into more productive activities. Moderate WMS values for health challenges (2.42) and lack of entrepreneurial skills (2.29) imply that poor health and low business capacity further limit income diversification, keeping farmers in low-return activities. This aligns with Alemu (2023) [3], who noted that skills and labour efficiency significantly influence the benefits derived from diversification. However, the lower WMS for policy barriers (1.55), cultural norms (1.52), and market access (1.45) indicates that these are perceived as less critical constraints compared to resource-based challenges, suggesting that internal household limitations are more binding than external factors.

Table 5: Challenges associated with livelihood diversification among arable crop farmers

S/N	Statement	Major F (%)	Minor F (%)	None F (%)	WMS	Rank
1	Limited access to education	182 (64.93)	75 (26.78)	23 (8.29)	2.89	1st
2	Inadequate capital for investment	213 (75.83)	40 (14.22)	28 (9.95)	2.65	2nd
3	Insecurity in the environment	180 (64.22)	68 (24.17)	33 (11.61)	2.52	3rd
4	Limited access to information and technology	155 (55.00)	94 (33.41)	32 (11.61)	2.43	4th
5	Health-related challenges	141 (50.00)	91 (32.46)	49 (17.54)	2.42	5th
6	Lack of entrepreneurship skills	141 (50.00)	82 (29.15)	58 (20.85)	2.29	6th
7	Policy and regulatory barriers	68 (24.17)	21 (7.58)	192 (68.25)	1.55	7th
8	Cultural social norms	35 (12.56)	75 (26.78)	171 (60.66)	1.52	8th
9	Limited access to market for diversified products	45 (15.88)	40 (14.22)	196 (69.90)	1.45	9th

Source: Field Survey, 2026

Test of hypotheses

The hypotheses of the study stated in a null form were tested and the results are presented below.

H₀₁: There is no significant relationship between selected socioeconomic characteristics and the effect of livelihood diversification on arable crop farmers' household wellbeing in the study area.

The test of the significant relationship between selected socioeconomic characteristics and the effect of livelihood diversification on arable crop farmers' household wellbeing in the study area were presented in Table 6. Socio-economic factors (age, household size, income, farm size, and farming experience) of the respondents show a positive and significant influence ($p < 0.05$) on livelihood diversification

among farmers. Income ($r = 0.411$) has the strongest effect, indicating that better-off households diversify more due to greater investment capacity, which agrees with recent findings that income strongly drives diversification intensity (Alemu, 2023) [3]. Household size ($r = 0.283$) also plays an important role by providing labour for multiple activities, consistent with evidence that larger households diversify more (Kassegn & Abdinasir, 2023) [8]. Additionally, age ($r = 0.241$) and farming experience ($r = 0.227$) suggest that older and more experienced farmers are more likely to diversify due to better knowledge and risk management, while farm size ($r = 0.207$) indicates that access to land supports diversification.

Table 6: Relationship between socio-economic characteristics and livelihood diversification among arable crop farmers

Socio-economic characteristics	r-value	p-value	Remark
Age	0.241	0.011	S
Household size	0.283	0.021	S
Income	0.411	0.017	S
Farm size	0.207	0.016	S
Farming experience	0.227	0.022	S

Source: Data analysis, 2026. S = Significant; NS = Not Significant

H₀₂: There is no significant relationship between the challenges associated with livelihood diversification on arable crop farmers’ households and the effect of livelihood diversification on arable crop farmers’ household wellbeing in the study area.

The test of the significant relationship between the challenges associated with livelihood diversification and the perceived effects of livelihood diversification on arable crop farmer’s households was presented in Table 7. Pearson Correlation analysis revealed a positive and significant relationship ($r = 0.305$, $p = 0.001$) between the challenges and the perceived effects of livelihood diversification. This implies that as challenges increase, they significantly influence (and often limit) the outcomes of diversification on household wellbeing. The correlation ($r = 0.305$) suggests that constraints such as lack of capital, poor access to resources, and insecurity shape how effective diversification can be. This supports findings by Alemu (2023) ^[3] that the benefits of livelihood diversification depend on the level of constraints faced by households. Similarly, Habib *et al.* (2023) ^[7] emphasize that livelihood outcomes are strongly affected by limitations in human, financial, and institutional assets.

Table 7: Summary of Pearson Correlation analysis showing the relationship between the challenges associated with livelihood diversification on arable crop farmers’ households and the effect of livelihood diversification on arable crop farmers’ household wellbeing in the study area

Table 7: Livelihood Challenges and Household Wellbeing

Variables	r-value	p-value	Remark
Challenges	0.305	0.001	S

Source: Data analysis, 2026 S = significant; NS = not significant

Conclusion and Recommendations

The study established that livelihood diversification significantly contributes to the wellbeing of arable crop farmers’ households in Southwestern Nigeria. Farmers engaged in various non-farm and off-farm activities mainly as a response to climate variability, crop failure, low farm income, and limited market opportunities. Livelihood diversification improved household income stability, social status, lifestyle, and reduced rural-urban migration. However, most diversification activities were concentrated in low-return and informal ventures, indicating that diversification among rural households is largely necessity-driven. The study further revealed that socioeconomic characteristics such as age, income, household size, farm size, and farming experience significantly influenced livelihood diversification, while challenges including inadequate capital, limited access to education, insecurity, and poor access to information and technology constrained its effectiveness.

The study therefore recommends that government and relevant stakeholders should strengthen rural financial support systems through accessible credit facilities and investment programmes for farmers. Extension and capacity-building services should also be enhanced to improve farmers’ entrepreneurial and technical skills for more profitable livelihood activities. In addition, improving rural infrastructure, market access, and climate adaptation support will enhance the sustainability and effectiveness of livelihood diversification strategies among arable crop farmers.

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