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Factors Affecting Intention to Adopt Urban Farming among Households in Niger State, Nigeria

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ABSTRACT

The aim of this research is to access the factors affecting intention to adopt urban farming among household in zone 2 of Niger state, Nigeria. Multi-stage sampling technique was used to select 104 farming households as respondents for the study. The data collected were analyzed using descriptive statistics such as mean, percentage, frequency distribution and inferential statistics such as ordered logit regression. The result in this research indicates that majority of the respondent are still in their youthful years (30 to 40) and most of them are male. Majority of them have been practicing urban farming for not more than 10years, 80% of them have at least a secondary education. Their major occupation is farming and 74% of the respondents are married. The types of urban farming indicated by the farming households were poultry production (96.2%) and crop production (90.0%) which are also the most adopted urban farming practices in the study area respectively. The result of the ordered logit regression shows that the prob>chi^2 is significant at 1% level of probability indicating a relatively good fit for the ordered logit regression model. However, age, level of education, farming experience, cooperative society, credit received, and farm size were the significant factors affecting intention to adopt urban farming practices in the study area. Inadequate land, low access to credit and high cost of medication were the predominant constraints associated with adoption of urban farming practices among the farming households in the study area. The study recommended that government should develop financial products and services tailored to urban farmers, such as microloans or grants. Establish partnerships with financial institutions to provide affordable credit options and financial literacy programs for farmers.

Keywords: Factors, Intention, Adopt, Urban farming and Households

I. INTRODUCTION

Urban farming, the practice of growing, processing, and distributing food in or around urban areas, has gained attention globally due to its potential to improve food security, create employment, and promote sustainable urban development (Steenkamp *et al.,* 2021). As population growth and urbanization escalate in regions like Niger State, Nigeria, the need to explore alternative methods of food production becomes critical. Urban farming can reduce the reliance on rural agriculture and mitigate the challenges posed by the rising demand for food in urban centers (Langemeyer *et al.,* 2021).

Urban farming could offer a solution by making it easier for households to access fresh and affordable food, improve dietary diversity, and provide income-generating opportunities (Lee-Smith *et al.,* 2019).

Urban farming contributes to food security and food safety in two ways. First, it increases the amount of food available to people living in cities, and second it allows fresh vegetable to urban consumers. Including urban farming in local plans and as proper land use will continue to help to promote communities gain a better wellbeing while fighting urban poverty. (Rene van Veenhuizen, 2006).

Despite its potential benefits, the adoption of urban farming among households in Zone two, Niger state remains relatively low. Several factors contribute to this phemenon, including limited access to land and water, lack of knowledge and skills, financial constraints, and socio-cultural barriers. Additionally, the absence of supportive policies and institutional frameworks may hinder the widespread adoption and scaling up of urban farming initiatives in Zone two.

II. METHODOLOGY

The study focuses on Zone 2 of Niger State, Nigeria, Niger state located in the central part of Nigeria. It is the largest state in the country by land mass of 76363Km² (Alhaji *et al.,* 2016). The state lies approximately between latitude 8.0^{0}N to 11.0^{0}N, and longitude 5.0^{0}E to 7.5^{0}E. Niger State is home to a variety of ethnic groups and languages, including the Gwari (Gbagyi), Nupe, Hausa, and other groups.

Zone 2 is the east senatorial district which is refer to as the second senatorial district. This district encompasses nine (9) local government areas (LGAs) which includes: Bosso, Gurara, Chanchaga, Munya, Paiko, Rafi, Shiroro, Suleja and Tafa local government area. The major language spoken in zone 2 of Niger state is Gbagy. This study focuses mainly on 3 local government area in zone 2 which include Bosso, Chanchaga and Gurara local government area.

Table 1: Sampling procedure of the respondents in the study area

ZONE	LGA	Community	Sample Frame	Sample Size
2	Bosso	Maitumbi	100	20
		Bosso Central	100	20
	Chanchaga	Minna Central	100	20
		Sabon Gari	100	20
	Gurara	Gawu	80	14
		Izom	50	10
TOTAL	**3**	**6**	**530**	**104**

Source: Niger State Agriculture and Mechanization Development Authority, 2023

Model Specification

Descriptive statistics such as (mean, frequency and percentage) and inferential statistics such as (ordered logit regression model) was used to achieve the said objectives Ordered Logit Regression model was used to achieve the factors affecting adoption of urban farming in the study area. The implicit form of the ordered logit model is given as:

$$Y = f(X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7 + X_8 + X_9 + X_{10} + X_{11} + X_{12} + X_{13} + X_{14} + X_{15} + e) \qquad (1)$$

The explicit form is specified as follow

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e \qquad (2)$$

Where:

Y= Level of adoption of urban farming (High=1, Moderate=2, Low=3), X_1= Age (Age of farmers)

X_2= Household Size (Number of people in the household), X_3=Gender (Male=1, Otherwise =0), X_4= Educational status of farmers (years of schooling), X_5= Farming experience (Number of years involved in farming), X_6= Marital Status (Married=1, Otherwise=0), X_7= Monthly income (Naira)

X_8 = Cooperative society (Belong to any cooperative society), X_9 = Credit received (Naira), X_{10}= Farm size (hectare), $\beta_1 - \beta_{11}$ =Regression coefficients, β_0= Intercept, e_i = error term

III. RESULTS AND DISCUSSION

The socio-economic characteristics of the respondents

The result indicated that the predominant age groups of the respondent (43.3%) were between 31 to 40 years. this implies that majority of the respondent are still in their youthful years. This result is similar with the findings of Twilumba *et al.* (2020) who reveals that majority (52.2%) of the farmers are between the ages of 31-40 years. The result on the table 2 indicates that 55.8% of the respondents are male, while 46 of the respondents are female which means that majority of the respondent are male. This result is in line with the findings of Teresa *et al.* (2020) who reported that majority (52.5%) of the farmers in the study area were males. Table 2 shows that, the major occupation of the respondent are farmers and civil servant which are 20.2% and 17 .3% respectively. While others are doctors, drivers, hair stylist, nurse, politician, self-employed, teachers and traders. This result contradicts with the findings of Ajua *et al* (2022) that the major occupation is trading. From the result in Table 2, indicates that 75% 0f the respondents are in a cooperative society, while the remaining 25% are not in any cooperative society. This agrees with the findings of Boisean, (2014) who observed that more than half (53.4%) of the respondents are members of cooperative organization. The result on the Table 2 shows that 74% of the respondent are married. This implies that majority of the respondent are married. This result agrees with the findings of Ssebaggala *et al.* (2016) who says that majority of farmers in the study area were married. The result on the table 2 also shows that 18.3% of the respondent live in an inherited house, 7.7% of the respondent live in their personal house, 4.8% live in purchased housed; 69.2% live in a rent house. this means that majority of the respondent are in a rent house. This result is in line with Siyaka (2023) who says that 52% of farmers lived in a rent house.

Table 2: Socio-economic characteristics of respondents

Variable	Frequency (N =104)	Percentage (%)
Age (Years)		
Below 20	5	4.8
21 – 30	12	11.5
31 – 40	45	43.3
41 – 50	38	36.5
Above 50	4	3.8
Gender		
Female	46	44.2
Male	58	55.8
Marital Status		
Single	10	9.6
Married	77	74.0
Divorce	3	2.9
Widow(er)	6	5.8
Seperated	8	7.7
Household size		
1 – 3	25	24.0
4 – 6	56	53.8
7 – 9	21	20.2
Above 9	2	1.9
Level of education		
No formal education	8	7.7
Primary education	17	16.3
Secondary education	27	26.0
Tertiary	50	48.1
WAEC	2	1.9

Source; Field survey 2024

Types of Urban Farming Practices

Table 3 show the result of distribution of respondents according to type of urban farming currently being practiced, season in which urban farming is being practiced, how long have they been practicing urban farming. The results shows that (96.2%) of the respondent are into poultry farming, (90.0%) of the respondent are into crop production, 14.4% of the respondent are into snail farming, 15.4% of the respondent are into piggery , 79.8% of the respondent are into vegetable production , 50% of the respondent are into rabbit rearing,45.2% of the respondent are into horticultural plant, and lastly 86.5 of the respondent are into ruminant animal / cow fattening. This implies that majority of the respondent are into poultry and crop production. This result is similar to a study by Ofordu *et al* (2022) which indicated that household in urban areas engage in urban farming with crop production as the most practiced type of agriculture. Majority (66.3%) of the respondent practiced urban agriculture during the raining season, while the remaining 33.7% practice urban farming during dry season.

The result in Table 3, shows that 1.9% of the respondent have been practicing urban agriculture for more than 10 years, while 45.2% have been practicing urban farming for 6 to 10 years, and lastly 52.9% have been into urban farming for 1 to 5 years. Which means that majority of them have been practicing urban farming for not more than 10years. This contradicts with the findings of Okpe *et al.* (2022) who reported that, majority (65.3%) of the respondents has relatively farming experience of 10-20 years.

Table 3: Type of farming currently being practice

Types of farming	Yes (%)	No (%)
Poultry farming	100 (96.2)	4 (3.8)
Crop production	94 (90.4)	10 (9.6)
Snail farming	15 (14.4)	89 (85.6)
Piggery	16 (15.4)	88 (84.6)
Vegetable production	83 (79.8)	21 (20.2)
Rabbit rearing	52 (50.0)	52 (50.0)
Horticultural plant	47 (45.2)	57 (54.8)
Ruminant animal / cow fattening	90 (86.5)	14 (13.5)
Years of farming experience		
1-5	55 (52.9)	49 (47.1)
6-10	47 (45.9)	57 (54.1)
Above 10	2 (1.9)	102 (98.1)
Season of practicing urban farming		
Dry	35 (33.7)	69 (66.3)
Raining	69 (63.3)	35(33.7)

Source; field survey ,2024

Perceived benefit of urban agriculture

Table 4 shows the perceived benefit of urban agriculture from the respondent. The result reveal that majority of the respondents strongly agreed that urban agriculture is environmentally friendly, ease in practicing, can be practiced during leisure time organic waste can be useful in urban farming, there is a great feeling in producing own food, it reduces the cost of buying fresh vegetables and food, help in increasing food availability and serve as a source of bio-diversity and ecological resilience in urban area. Also, they agreed that urban farming Urban agriculture gives control what kind of production system to be used (organic or conventional), Community Garden serves as a place for relaxation and foster unity, helps in recycling waste, offers educational opportunity especially for children, helps children to develop valuable skills and helps children to develop environmental stewardship and sense of responsibility towards food and nature. This result agrees with the findings of Bardley and Galt,2013 who reported that urban farming can beautify and build in trust in the neighborhood.

Table 4: Perceived benefit of urban agriculture

Benefit of urban farming	SA (3)	A(2)	D (1)	WS	WM	Rank
Urban agriculture is environmentally friendly	83 (249)	21(42)	0(0)	291	2.7	1st
Ease in practicing urban farming	54(146)	49(98)	1(1)	261	2.5	5th
Consuming of home-based product is possible with urban farming	43(129)	60(120)	1(1)	250	2.4	10th
Urban farming can be practiced in my leisure time	61(183)	42(84)	1(1)	268	2.6	2nd
Urban farming has high economic advantage	44(132)	60(120)	0(0)	252	2.4	10th
Organic waste/material can be used for manure in urban farming	58(174)	46(92)	0(0)	266	2.6	2nd
Urban farming creates good feeling in producing own food	55(165)	49(98)	0(0)	263	2.5	5th
Urban farming can reduce the cost of buying fresh food	53(159)	51(102)	0(0)	261	2.5	5th

Source: Field survey, 2024

Factors Affecting Adoption of Urban Agriculture

The result of the Logit regression model on Table 5, shows the R^2 value of 0.318. This implies that about 31.8% of the variation in adoption of urban farming (Y) was explained by the variables (X_1– X_{10}) included in the model while the remaining 68.2% is as a result of non-inclusion of other

explanatory variables in the model. Out of the 10 variables, 6 were found to be statistically significant in explaining intention to adopt urban farming. The result also revealed that age was positive and significant at 10%. This connotes that increase in age might lead to increase in the intention to adopt urban farming. Reason for this result could be that as people advance in age, they tend to look for activities that will keep them busy of which urban farming is one. Also, Table 5 pointed out that year of schooling was found to be positive and significant at 5% level of probability. The result implies that as people's level of education increases, the intension to adopt urban farming might also increase. The result further revealed that farming experience was positive and significant at 10%. This implies that increase in years of farming experience will probably lead to increase in intention to adopt urban farming.

Membership of co-corporative society was found to be positive and significantly influence the decision to adopt urban farming at 1% level of probability. The result also means that, increase involvement in co-operative society might increase the intention to adopt urban farming. The reason could be that being a member of co-operative society comes with numerous benefits The result agrees with the study of Victoria *et al.* (2012) who reported that being a member of association comes with so many benefits among which include, access to input at cheap price, extension services and training on different agricultural activities. The amount of credit received is positive and significant at 10% probability level. This implies increase in the amount of credit received by the respondent might probably lead to increase intention to adopt urban farming. More so, farm size was positive and significant at 10%, This indicates that, the larger the farm size, the higher the intention to practice urban farming. The reason for result could be that as farm size increases, farmers might want to experiment new technologies or have nursery in the houses. The results are in line with the findings of Leonard*o et al* (2024) who in their study titled Analysis of the Influence of Forms of Urban Agriculture on that Socio Economic Status of the Farmers in Kampala and Mbarara Cities, Uganda reported that there exists robust connotation between urban agriculture and the socioeconomic status of the urban farmers in Kampala and Mbarara Cities.

Table 5: Factors Affecting Adoption of Urban Agriculture

Variable	Coef	Std error	Z-value	P>|Z|
Age	.1773502	.0903032	1.96*	0.050
Gender	-1.03842	.6911938	-1.50	0.133
Marital status	.3776081	.475233	0.79	0.427
Household size	.331314	.2339426	1.42	0.157
Education status	.1914522	.0837251	2.29**	0.022
Farming experience	.4214743	.2316167	1.82*	0.069
Monthly income	.0000238	.0000164	1.45	0.146
Cooperative society	2.773194	.9430619	2.94***	0.003
Credit received	3.00e-06	1.76e-06	1.71*	0.088
Farm size	.6841476	.4064212	1.68*	0.092
Constant	-2.99914	3.005321	-1.00	0.318
Number of observations	104			
LR chi^2 (10)	30.46			
Prob >chi^2	0.0007			
Pseudo R^2	0.3178			

Source; Field survey, 2024

Note: *** = significant at 1% ** = significant at 5%   *= significant at 10%

IV. Conclusion

From the research, majority of the respondent are male and are mostly married. The major types of urban farming practices by the respondent are poultry and crop production. The result concludes that the factors affecting intention to adopt urban agriculture in zone 2 of Niger state include level of education, farming experience, farm size, and membership of cooperative society.

V. Recommendations

- ❖ Development of financial products and services tailored to urban farmers, such as microloans or grants. Establishing partnerships with financial institutions to provide affordable credit options and financial literacy programs for farmers.

- ❖ Supporting the establishment of local feed production facilities and supply chains to lower costs. Additionally, promote research and development of cost-effective and sustainable feed and medication solutions...

- ❖ Investing in infrastructure such as marketplaces and transportation systems to ensure farmers have reliable access to markets. Encourage the development of local markets and food distribution channels.

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