Willingness and Capacity to Pay for Extension Services by Poultry Farmers in Nasarawa State, Nigeria

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The study determined the willingness and capacity of poultry farmers to pay for extension services in Nasarawa State, Nigeria. At this research used a sample size of 120 poultry farmers. Simple descriptive statistics, Kuppuswamy scale and Logit regression model were used data analysis. The results showed that majority of the poultry farmers (87.5%) indicated their willingness to pay for extension services. In addition, the respondents had preferences for extension services on disease control and vaccination of poultry birds. Majority of the respondents (54.2%) in the study area had either a high capacity to pay for extension services while only 25% had a very high capacity to pay. Most of the respondents (56.7%) preferred to pay on individual extension services basis followed by a preference to pay on annual contract system of payment basis (21.7%). The Logit model, however, revealed that number of birds owned by a farmer and the number of extension services received by the farmer determined their willingness to pay for extension services. The study recommended that livestock extension delivery system in Nigeria should be restructured thorough agricultural extension transformation agenda to allow for private livestock extension outfits to take off in Nigeria.

Keywords: Extension, Willingness, Poultry Farmers, Capacity Kuppuswamy Scale

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1. Introduction

The public sector agricultural extension strategy to increase agricultural productivity and alleviate poverty is not improving. Consequently, the public extension system is now seen as outdated top-down, paternalistic, inflexible, subject to bureaucratic inefficiencies and therefore unable to cope with the dynamic demands of modern agriculture (Rivera et al., 2000). The most significant short coming of public agricultural extension in general have been unresponsiveness to the variation in farmers' needs, lack of ownership by intended beneficiaries, limitation in the quality of field and technical staff's unstable policy and political support (Idachaba, 2005). Financial capability to pursue extension activities is often a problem when external funding is not supportive. Governments are not therefore, capable of providing all the services expected of them due to financial limitations.

Bernet et al. (2001) suggested that extension providers need income generating potential improving and financially effective activities to attract them to the enterprises. Chapman and Tripp (2003) observed that privatization of agricultural extension service will only be effective if there are well trained personnel who are willing and able to respond to farmers' requirements considerable public sector investment in education and training. Similarly, farmers need increased capacity to be able to manage, contact and evaluate private extension provision. This capacity may be enhanced through appropriate farmers associations and through decentralized political structures.

Poultry production has become a fulltime job for many Nigerians and it significantly contributes to the Gross National Product (GNP) (Umeh and Udo, 2002). Poultry products mainly meat and eggs represent important food for improving the nutritional status particularly of the most vulnerable populations –children and pregnant women. However, the problem facing poultry productions are numerous. They include low egg production, poor weight gain, feed conversion, lack of capital, and poor management (Apantaku et al., 1998). These problems need proper care, technical knowledge, finances and proper management of the poultry industrial. In order to sustain the interest of poultry farmers in poultry production, effective research and extension are necessary to ensure meaningful impact on poultry productivity and farmers' standard of living. The aspiration of the farmers must be met to reasonable extent by the income accruing from the business. Proper care of the

birds are necessary to ensure increase in egg production and or increased weight gain.

As pointed out by Birner et al (2006), the willingness to pay (WTP) approach could be used to estimate the direct benefit of agricultural advisory services in the absence of a market for such services. The application of such methods in various country settings and agro ecological zones can shed light on actual benefits and costs of advisory services (such as extension). Horna, Smale and Oppen (2005) examined farmers' preferences for new rice varieties seed and their willingness to pay for information as a measure of WTP for rice production advisory services in Nigeria and Benin. Farmers' preferences were modelled as a function of the utility obtained from rice seed varieties, the farmer's social and economic characteristics, and the level of information about the varieties. The results of the study indicated that variety attributes are important determinants of the seed preferences stated by farmers, the results of the study indicated that variety attributes are important determinants of the seed preferences stated by farmers. The awareness level of agricultural technology is hypothesized to have a positive effect on willingness to participate in technology investments (Pender and Kerr, 1998). Asrat, Belay, and Hamito (2004) found that farmers who were aware of the available options for agricultural technology were more receptive to paying for these technologies. Considering the challenge of providing an efficient agricultural extension system for farmers in developing countries, privatized extension has been widely debated (Farrington, 1994; Kidd et al., 2000; Rivera, 2001) such that a higher level of farmers involvement in the extension processes is advocated and the need to meet diverse range of options including information on markets, rural industry and other income opportunities (Farrington et al., 2002).

Generally, following Aryal et al. (2009), farmers' willingness to pay for a given agricultural service is a function of knowledge, attitude, and intention. Available information influences both knowledge and attitude toward the proposed service. Socioeconomic characteristics such as age, gender, and income also shape a consumer's willingness to pay, because those characteristics affect attitudes toward agricultural service. In addition, market characteristics such as accessibility and prices affect purchase behaviour and ultimately farmers' willingness to pay.

The study attempts to determine the willingness and capacity of poultry farmers in Nigeria to pay for extension services. In addition, their preferred mechanism for payment, types of extension services preferred and the factors that affect their willingness to pay for extension services were also identified.

2. Materials and methods

The study was carried out in Nasarawa state, Nigeria. The state has interstate boundaries with Kaduna state to the north, in the south by Kogi and Benue states, in the west by the Abuja, Federal Capital Territory and in the east by Taraba and Plateau states. A network of roads exists within the state, linking all the rural areas and major towns. The state covers an area of 28,735sq km and has a population of 2,040,097 (Census, 2006). The main ethnic groups in Nasarawa state are the Alago, Agatu, Basa, Ebira, Eggon, Gbagyi, Gwandara, Kanuri and Tiv. The state is also home to a number of traditional religion practitioners. Nasarawa state has thirteen (13) local Government Areas; each of them has a chairman as its administrative head.

A multi-stage sampling technique was used for the selection of respondents for the study. Three (3) Local Government Areas (Keffi, Karu, and Nasarawa) were randomly sampled for the study. Four (4) extension blocks noted for poultry production were purposively selected from each of the local government areas. Each of the blocks has an average population of about 20 poultry farmers and 10 poultry farmers were selected for the study from each block using simple random sampling technique to give a total sample size of 120 respondents for the study. The primary data were collected using an open and close-ended questionnaire to get information from poultry farmers. Socio-economic characteristics of the respondents, types of extension services farmers are willing to pay for and the preferred mechanisms for payment for extension services were analyzed using simple descriptive statistics Logit Model was used to analyse the factors affecting farmers' willingness to pay for extension services and the capacity of farmers to pay for extension services was examined using the Kuppuswamy socio-economic scale (Ravi, Shankar and Rao, 2012).

The logit model is a model developed based on the cumulative logistic probability function. The model assumes that the probability is:

$P_1 = F(Z_i) = 1/1+e^{-zi} = e^{zi}/e^{zi} + 1$

$Z_i = \propto + \beta x_i$

P_i = 1 if the poultry farmer is willing to pay for extension services and 0 otherwise

X_i = is a vector of explanatory variables

X_1 = age

X_2 = gender

X_3 = no. of birds

X_4 = level of education (years)

X_5 = frequency of public extension services

X_6 = years of experience in poultry farming

X_7 = average income from poultry production
X_8 = household size

The Kuppuswamy socio-economic status scale measures the socio-economic status of poultry farmers based on weights assigned to education, Livelihood activity and asset of the family.

Table 1. The Kuppuswamy socio-economic status scale

Education	Weight/score
University	7
Polytechnic/college of education	6
Secondary	5
Primary	4
Adult education	3
Quaranic	2
None	1
Livelihood activity	Weight/score
Government/private organization	10
Self employed	6
None	1
Asset	Weight/score
House	10
Car	8
Motorcycle	6
Electronic device (examples; television, radio, etc)	4
Land	12

Table 2. Interpretation of the Kuppuswamy socio-economic status scale

Total score	**Weight/score**
1 – 8	Very low
9 – 17	Low
18 – 26	High
27 – 35	Very high

3. Results and discussion

Willingness of Poultry Farmers to pay for Extension Services

The number of respondents willing to pay for extension services in the study area is presented in Table 3. The result revealed that a huge majority of the respondents (87.5%) are very willing to pay for extension services while only 12.5% of the respondents are not willing to pay for extension services.

Table 3. Number of Respondents Willing to Pay for Extension Services

Willing to pay	Frequency	Percentage
Yes	105	87.5
No	15	12.5
Total	120	100

Source: Field survey, 2014.

Types of Extension Services Poultry Farmers in the area are willing to pay for

The different types of extension services farmers in the study are willing to pay for are presented in Table 4. These preferences basically represent the points of incidence of the different challenges faced by poultry farmers in the area. Most of the respondents (30%) would prefer extension training on disease control, surprisingly only 21.7% of the respondents have preference for feed formulation training. About 23% of the respondents however preferred extension in vaccination of poultry birds. Bio-safety preference was identified by 16.7% of the respondents. The least preferred extension service training was on Debeaking at 8.3%.

Table 4. Extension Services Poultry Farmers are willing to pay for

Extension services	Frequency	Percentage
Bio-safety	20	16.7
Vaccination	28	23.3
Feed formulation	26	21.7
Disease control	36	30
Debeaking	10	8.3
Total	120	100

Source: Field survey, 2014.

Preferred mechanism for Payment for Extension Services

The preferred mechanisms for payment for extension services are presented in Table 5. Most of the respondents (56.7%) preferred to pay on individual extension services basis. For annual contract system of payment for extension services 21.7% of the poultry farmers in the study area indicated preference. On the other hand, 13.3% of the respondents preferred payment on the basis of cost sharing by group of poultry farmers. About 8% of the respondents indicated preference for payment on the basis of effect of treatment or advice after extension service is provided.

Table 5 Mechanisms for Payment for Extension Services

Extension payment mechanism	Frequency	Percentage
Annual Contract system	26	21.7
Individual Services	68	56.7
Cost Sharing	16	13.3
Effect of treatment	10	8.3
Total	120	100

Source: Field survey, 2014.

Capacity of Poultry Farmers to Pay for Extension Services

The capacities of poultry farmers in the study area to pay for extension services were computed using the Kuppuswamy socio-economic status scale. The results of the different socio-economic capacities of poultry farmers in the study area are presented in Table 6. Only 0.8% of the respondents had very low capacity to pay for extension services. Another 20% had a low capacity to pay for extension services. Most of the respondents (54.2%) in the study area, however, had a high capacity (18 – 26 score on the Kuppuswamy scale) to pay for extension services. An impressive 25% of the respondents had a very high capacity to pay for extension services. This implies that majority of the respondents in the study area had either a high (54.2%) or very high (25%) capacity to afford extension services and can therefore afford to pay for extension services.

Table 6. Poultry Farmers' capacities to pay for Extension Services

Kuppuswamy Score	Inference	*f*	%
1 – 8	Very low	1	0.8
9 – 17	Low	24	20
18 – 26	High	65	54.2
27 – 35	Very high	30	25
Total		120	100

Source: Field survey, 2014.

Demographic Factors Affecting Poultry Farmers' Willingness to Pay for Extension Services

The result of the willingness function of poultry farmers to pay for extension services is presented in Table 7. The result reveals the significant determinants of poultry farmers' willingness to pay were number of birds and number of extension visits both at 5% respectively. This is because there was a positive and significant relationship between poultry farmers' willingness to pay and the number of birds they have as well as the number of extension visits they receive. The result implies that the number of birds owned by poultry farmers affects their willingness to pay as they would require more technical insight as to how to manage them. The investment in a large number of birds justifies a willingness to pay for extension services in order to ensure both health and maximum profitability of the investment.

Discussion

The study revealed that there was high willingness among local poultry farmers in the area to pay for private extension services. This finding is in congruent with findings of Oladele (2008) for Oyo state South West Nigeria who observed a low trend of willingness among local farmers in the area to pay for specific extension services. It was also incongruent with findings of Ulimwengu and Sanyal (2011), for Uganda, who also observed a low trend (less than 50%) in farmers' willingness to pay for agricultural services. On the other hand, the farmers' capacities to pay for agricultural services which were observed to be high in the study bore rich parallels with the findings of the study by Oladele (2008) who also observed a high capacity of farmers to pay for agricultural services.

The study revealed also that the size of the poultry farms (number of birds) was a strong factor that affected the willingness of farmers to pay for agricultural services. This finding was also congruent with the finding of Oladele (2008) who opined that farmers' willingness to pay for agricultural services will be increase with an increase in the farmers' farm size.

Table 7. Logit function for Factors Affecting Poultry Farmers' Willingness to Pay for Extension Services.

Variable	**Coefficient**	**SE**	**Sig**
Constant	-2.370	1.715	0.167^{NS}
Age	0.030	0.025	0.228^{NS}
Number of birds	-0.080	0.035	0.021^{**}
Education	0.087	0.069	0.208^{NS}
Gender	0.141	0.559	0.801^{NS}
Extension visits	-0.250	0.102	0.014^{**}
Farming experience	0.130	0.144	0.366^{NS}

** = Significant at 5% NS = Not significant

Source: Field survey, 2014.

4. Conclusion

Poultry farmers in the study area are willing and also have the capacity to pay for extension services especially on disease control and vaccination of poultry birds. Furthermore, this implies that the hitherto inefficient public livestock extension services can be strengthened if livestock farmers are charged reasonably for extension services rendered to them.

Recommendations

The Livestock extension delivery system in Nigeria should be restructured thorough Agricultural extension transformation agenda to allow for private extension outfits to take off in Nigeria.

There is need for appropriate policies to be in place for the regulation of private extension outfits prior to their establishment. This is necessary in order to prevent famers from being exploited.

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