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Market Contribution of Indigenous Poultry Farmer at Household Level

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Abstract: This study was broadly designed to analyze indigenous poultry market participation in Eravurpattu DS division in Batticaloa district. The study was mainly based on primary data obtained from a sample survey in four G.N Divisions in Eravurpattu DS Division. The simple random sampling technique was used to draw the sample and data were collected through pretested questionnaires. In addition to that, secondary data were also used. Data were analyzed using a statistical software, and descriptive statistics, frequencies and regression were done. Aspects of socioeconomic features of farmers, management practices, productivity of animals and socio economic determinants of poultry market participation decision were studied. Most of the indigenous chicken owners were females and practiced indigenous chicken farming as a part time work. Main purpose of Indigenous chicken rearing was both egg and meat production for 91% of farmers. It was found that high loss of birds due to improper housing/predation and disease attack were the major problems faced by chicken farmers. There is no organized marketing for indigenous chickens and eggs. However, middlemen, households and village shops were involved in the marketing activities. The main marketing channel was producer to consumer (75%) through households. The regression results showed that households' decision to participate in the poultry market was significantly ($p<0.05$) affected by sex of household head, bicycle ownership, market accessibility and source of market information. Further the results suggest that, establishment of effective market information service will enhance the sales of indigenous chicken farmers.

***Keywords*:** Indigenous, Sampling, Pretested, Regression, Socioeconomic, Determinants

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Introduction

The agriculture sector contributes 11.2% to the GDP of the country, 24 % of total export earnings and 33 % of national employment in Sri Lanka. Livestock is a sub sector of agriculture and accounts for 7.1% and 0.8 % of the agricultural and national GDP, respectively (CBSL, 2011). The most prominent sub sectors of the livestock sector are dairy and poultry, which provide employment and income to a majority of rural farmers (BOI, 2018). Indigenous chicken production in Batticaloa district has a high potential for poultry production. Village chicken, broilers, layers and ducks are mainly reared in this district. Considerable number of people is involving in village chicken rearing in this district. The production range is small scale at home level and is usually done as a part time occupation or a supplementary income. In Batticaloa district chicken meat is highly produced other than beef and mutton (DVS, Personal Communication, Batticaloa, 2018).

The village chicken are reared both in the rural and semi urban areas in the district. However, they are found very frequently in rural villages of Batticaloa district. The average flock size varies from 5-15 birds. More importantly, there are no commercial-level village chicken productions using intensive management practices as people do with exotic breeds. Birds are set free to scavenge during the day and kept in small houses in the night. According to the observations, house wives and children frequently have the responsibility in looking after the animals (District Statistical Information, Batticaloa, 2018).

Batticaloa district has 14 DS divisions. Eravur Pattu is one of the important DS divisions where indigenous chicken farming is done. Over 85% of the domesticated birds in Eravur Pattu are indigenous chicken providing meat and table eggs. They are frequently raised through the free range, backyard production system. There are an estimated 22,508 birds in Eravur Pattu with Indigenous Chicken being 85% of this number. Indigenous poultry production is an important activity for 75% of the rural population in Eravur Pattu and these birds are mostly kept for domestic consumption and sale (DAPH, Eravur pattu, 2018).

There are 39 G.N. Divisions in Eravur Pattu. Among those only 16 G.N Divisions are rearing backyard or home poultry or indigenous chicken farming at household. Kaluvankerny 1, Kaluvankerny 2, Palacholai and Sitttandi 4 consist highest number of Indigenous poultry farmers at household level. DAPH provides valuable advice and services to indigenous chicken rearing farmers such as training regarding the breeding, vaccination programme (V.S.Office, 2018).

Research Problem

There are many socio economic factors which affect the production, marketing, market participation and sales of indigenous chicken in rural household: Farming experience, family size, age, sex

and primary activity of household head, monthly household income, and education, number of children, breeds, bicycle ownership, market accessibility and market information.

Therefore this study was carried out to identify the factors that determine poultry market participation and sales of indigenous chicken farmers in GN range in Eravur Pattu DS division in Batticaloa District.

Objectives of the Study

1. To understand, the socioeconomic characteristics of the farmers who rear indigenous chicken,
2. To identify, understand the socioeconomic factors affecting the poultry market participation,
3. To identify the problems in indigenous chicken production and marketing.

Research Methodology

Selection of Sample

Kaluvankerny- (Akkarai), Kaluvankerny, Sittandy Part (Mathurenkulam) and Palacholai villages were selected Based on the degree of indigenous chicken production to collect the information. Then GN divisions were selected with degree of total number of indigenous chicken farming families from selected areas. Proportionate people size was selected from each GN divisions. Simple random sampling method was used to select the samples. The final sample comprised of 60 respondents.

Statistical Analysis

Multiple regression was done to analysis the data. Description of variables were given in Table 1.

Table 1: Description of the variables for poultry market participation in multiple regression

Variable name	Unit	Description
Dependent variable	Yes = 1	Categorical variable of whether HH sell live birds, chicken products(meat or eggs) or not
Poultry market participation = Y I	No = 0	
Independent variables		
Sex of household head = X1	Male = 1	Categorical variable of whether the HH head is a male or female
	Female=2	
Age of HH = X2	Years	Age of HH in years
Educational level = X3	Years	Years of schooling
Farming experience = X4	Years	Years of farming
Transport (bicycle ownership) = X5	Yes=1	Categorical variable of whether the HH own a bicycle or not
	No=2	
Market accessibility=X6	Yes=1	Categorical variable of whether the HH had market access or not
	No=2	
Availability of market information = X7	Yes=1	Categorical variable of whether the HH has any source of information on poultry market.
	No = 2	

Results and Discussion

The average age of indigenous chicken farmers in the study area was 35 years. Data revealed that all indigenous chicken farmers were females in this study area. There were no any male indigenous chicken farmers. All of the indigenous chicken farmers from this area were Hindu. The average farming experience of farmers was 6 years. The average family size of a household was 4 members. The average land size owned by poultry farmers was 2.3 acres. The average family income of the chicken farmers was Rs 13,900 per month (Table 2).

Table 2: Socio-economic status (N= 60) (Source: Field Survey Data, 2018)

Trait	Mean	Std. Deviation
1. Age (Years)	35.08	8.22
2. Farming experience (Years.)	6.10	3.31
3. Family size (No of HH members)	4.78	1.16
4. Income per month (Rs)	13900	3615.87
5. Land sized owned (Ac)	2.33	16.10

Educational level of farmers was determined by the years of schooling they had followed. It was observed from the survey that 35% of respondents were primary category, 65% of farmers had secondary category education. 35% of farmers have the experience of less than 6 years of schooling and 21.7% of farmers have 6-7 years of schooling 43.3% of farmers have the experience of greater than 7 years of schooling, respectively (Table 3). It was indicated by Saha (2003) that sufficient level of education is motivating the farmers to adopt the newer technologies.

Table 3: Schooling years of farmers (Education level of Farmers) (N=60) (Source: Field Survey Data, 2018).

Years of schooling	Number of farmers	Percentage
1. Less than 6 years	21	35
2. 6 - 7 years	13	21.7
3. More than 7 years	26	43.3
Total	60	100

The survey results indicated that farming was the major livelihood activity of 60 percent of respondents earned through agriculture activities. About 15 percent of respondents involve in other jobs such as government service and private sector. Rest 10 percent of the respondents involved in business activities (Table 4).

Table 4: Occupation of farmers (N=60) (Source: Field Survey Data, 2018)

Occupation	Frequency	Percentage (%)
1. Government	9	15
2. Private sector	9	15
3. Farming	36	60
4. Business	6	10
Total	60	100

Engaged in Indigenous Chicken Farming

When time spending with poultry rearing considered most of the farmers (94%) practiced part time. Only 6% of farmers practiced in full time because stable income cannot be obtained from village chicken rearing. It contributes fewer amounts of cost of living.

Farmer's Involvement in Indigenous Poultry

Survey revealed that all farmers reared indigenous chicken. Among those 51.7% of the farmers reared livestock other than indigenous chicken. Among those 21.7% of the farmers reared indigenous chicken with other poultry species such as layer and broiler. When indigenous chicken is reared with other breed, diseases are spread out quickly. Therefore, majority of farmers do not like to mix together.

Purpose of Rearing Indigenous Chicken

Purpose of rearing indigenous chicken varies among farmers. Survey revealed that main purpose of indigenous chicken rearing was both egg and meat for 91% of farmers, 9% of farmers said solely for egg purpose, main purpose of indigenous chicken was for their home consumption. In the survey area, high demand for indigenous chicken egg and meat exists because taste of this product is better than other poultry species product. Nobody rear for only Meat purpose. When indigenous chicken stopped laying egg it is sold for meat otherwise they use for home consumption

Indigenous Chicken Production

Free range system of production was practiced by the majority of chicken keeping households during the day. Surprisingly, a considerable proportion

(6.7%) of all households keeps chicken under confined (with roof) system during day. Confined (with roof) system was practiced by majority of household during night. Considerable proportion (13.3%) of household keeps chicken under free range system at night. Average flock size of household in this area was 25.83.

Dominant Breeds

Majority of surveyed people reared indigenous breed rearing (Table 5). Some of them had other breed. Indigenous breeds can be managed with low cost and disease attack is very low. In surveyed area people have not enough facilities to go for other breeds. Naked neck and normal indigenous chicken birds were commonly found in surveyed area.

Table 5: Chicken management practices

Variables	Percentage of farmers
a. Housing practices	
1. Day	
Free range	93.3
Confined (with roof)	6.7
2. Night	
Free range	13.3
Confined (with roof)	86.7
b. Feeding practices	
Kitchen waste	65
Grains	40

Indigenous chicken production is characterized by low input production systems (Alemu, 1995). The results in Table 5 indicated that the majority of indigenous chicken farmers used free range system during the day time (over 93.3%) and confined chicken at night (86.7%). There was no purposeful practice of feeding chicken while scavenging was the predominant way of feeding. In addition to scavenging, supplementary feeds (kitchen waste-65%, grains-40%) were provided to chicken when available. The all of indigenous chicken farmers used natural uncontrolled breeding for their chicken. The average unit cost of supplementary feed per kg was 75.00.

The average age of pullets at first laying was 5.78 months. The average number of eggs/clutch was 18 with an average 2 clutch/year. The average weight of adult male and female normal village chicken were 1.88 kg and 1.10 kg, respectively. These results showed that the production performance of indigenous chicken were comparatively low (Table 6).

Table 6: Productivity of indigenous chicken (N=6)

Variables	Mean	Std. Deviation
1. Age at first laying (Months)	5.78	0.48
2. Number of eggs per clutch	18.63	2.72
3. Number of clutch per year	2.50	0.50
4. Average marketing weight of male bird (kg)	1.88	0.21
5. Average marketing weight of female bird (kg)	1.10	0.20

However, Aberre (2000) revealed that despite the low productivity, indigenous chicken possess desirable characteristics such as thermo-tolerance, resistance to some diseases, good egg and meat flavor, presence of hard egg shells, high fertility and hatchability as well as high dressing percentage. Therefore, the indigenous chicken has the potential to improve in a rural setting while enhancing the livelihood of rural farm families.

Marketing of Indigenous Chicken

There is no organized marketing for indigenous chickens and eggs. Chickens are sold alive to meet family needs and most sales takes place at the home. 60% of the farmers said that they sold or consumed most of the cockerels and kept most of the young hens for breeding. The average price of adult male and female birds was Rs.906.50 and Rs.434.14 respectively. The average price of an egg was Rs.20.00. Average number of eggs used for home consumption per month was 31.85 and average number of eggs sold per month was 24.13.

The average annual income for the village chicken production per year is unstable because value of home consumption is high in village chicken farmers. Reason for this observation is mainly due to low production capacity of these village chicken breeds. Farmers try to fulfill their need rather than the sale that small number of egg as they have small number of village chickens compared commercial poultry farmer.

Market Participation

Survey results shows that 85 percent of indigenous chicken farmers were sell their products (live birds/eggs) to consumers through various channels as stated above. Rest 15 percent of the farmers did not sell their products at all; because they had large family size and that was leads to high home consumption.

Survey results shows that most of the (95%) household decision making for market participation (selling eggs, selling chicken, home consumption of eggs and chicken) was taken by house wives.

Market Accessibility

Data revealed that about 23.3 percent of the respondents had market accessibility. About 61.7 percent of respondents not had market accessibility.

Market Information

Data revealed that 45 percent of indigenous chicken farmers received market information from various sources. Data revealed that majority of the farmers (85%) had taken market information from ot herowners. About 31.7% of the market information had been obtained from Department of Animal Production and Health (Table 7).

Table 7: Market information sources (N=51) (Source: Survey Data (Multiple response), 2018

Source	Frequency	Percentage
1. From other owners	51	85%
2. DAPH	19	31.7%

Marketing Problems

Middlemen involvement and low price have been reported (85% of farmers) as a major marketing problem, while about 53.3 percent of indigenous chicken farmers had transport problems in selling their product. About 66.7 percent of farmers had reported low marketable output. Also 60 percent of farmers stated that lack of buyers. About 45 percent of farmers had lack of marketing information (Table 8).

Table 8: Problems in marketing of indigenous chicken (N=51)

Major problems	Number of respondents & percentage
1. Middle men restriction	51 (85%)
2. Road and transport facilities	32 (53.3%)
3. Low price	51 (85%)
4. Low marketable output	40 (66.7%)
5. Lack of buyers	36(60%)
6. Lack of marketing information	27(45%)

Table 9: Other production problems (N=60)

Problems	Number of respondents & Percentage
1. Not enough veterinary services	46 (76.7 %)
2. Loss of birds due to improper housing or predation or thief	49 (81.7 %)
3. Lack of financial assistance to develop their flock	38 (63.3 %)
4. Natural disasters	11 (18.3 %)
5. Disease attack	53 (88.3 %)

Among the respondents 76.7 percent of the farmers had stated that not enough veterinary services affect the indigenous chicken production. About 81.7 percent of farmers had reported high loss of birds due to improper housing, predation and thief. About 63.3 percent of farmers had reported lack of financial assistance to develop their flock size. Also 18.3, 88.3 percent of farmers stated that natural disasters such as flood (November to December) and disease attacks affect the indigenous chicken production, respectively (Table 9).

Table 10: Suggestions for improving indigenous poultry production (N=60)

Solution	Number of respondents
1. Provide enough veterinary facilities	32 (53.3 %)
2. Provide better transport facilities	33(55 %)
3. Provide subsidies and loan	27(45 %)
4. Provide proper marketing facilities	46 (76.6 %)

Respondents suggested many solutions for the problems they were facing. Among the solutions indicated 53.3% of the respondents suggested the solutions of providing enough veterinary services. At the same time 55%, 45% and 76.6% of the respondents suggested the solutions of providing better transport facilities, providing subsidies and proper marketing facilities (Table 10).

Health Care

Disease Prevention

Survey results shows that 65 percent of respondent farmers did not take any preventive measures at all; this was due to they had not faced any severe disease incidence. Say (1987) emphasized disease prevention through regular vaccination. Department of Animal Production and Health in Vantharumoolai and some other private shops such as pharmacies are providing vaccine to the farmers. Some of the farmers used some indigenous treatments for disease prevention.

Availability of Medicines and Drugs

Most of the indigenous chicken farmers (76.7%) do not get medicines and vaccine due to lack of availability of the

veterinary medicines in the market and high price. About 23.3% of farmers are getting medicines from Veterinary Office and other private shops. Indigenous chicken farmers don't have enough awareness regarding the usage of the medicines and drugs.

Socio Economic Factors Affecting Poultry Market Participation

The multiple regression results revealed that this model was significant at level of 5% (0.05) and the R^2 was 0.821 which implied that about 82.1% of the variation in indigenous poultry market participation was explained by the factors such as sex of household head, age of household head, education level of household head, farming experience, bicycle ownership, market accessibility and source of market information. Thus, indigenous poultry market participation significantly affected by sex of household head, bicycle ownership, market accessibility and source of market information (Table 11).

Table 11: Results for regression analysis of poultry market participation. (N=60, R^2=0.821, F value = 34.13)

	Variable	Coefficient	t
	(Constant)	0.314	1.673
1.	Sex of HH head	-0.106	2.001*
2.	Age	0.001	0.209
3.	Educational level	0.002	0.199
4.	Farming experience	0.003	0.435
5.	Transport (bicycle ownership)	0.151	3.495***
6.	Market accessibility	0.233	5.704***
7.	Source of market information	0.085	1.759*

Dependent variable: Poultry market participation,***Significance** at 10% level, ****Significance** at 5% level, *****Significance** at 1% level (Source: Data Analysis SPSS output)

The estimated model can be written as follows:

Y= 0.314 - 0.106 sex of HH head + 0.001 age of HH head + 0.002 educational level of HH head + 0.003 farming experience + 0.151 bicycle ownership+ 0.233 market accessibility + 0.085 source of market information.

The results confirmed that the decision of a household to participate in poultry market is influenced by sex of the household head. This result is consistent with the findings of Gebregziabher (2010) reported that participate in poultry market significantly affected with sex of household headship.

The results confirmed that the decision of a household to participate in poultry market significantly affected by bicycle ownership. This finding is consistent with the finding of Olwande and Mathenge (2010) that ownership of transport equipment was significantly affected with the agriculture market participation among poor rural households in Kenya.

Conclusions

From the study following conclusions can be arrived, Most of indigenous chicken farmers were female and they practiced indigenous chicken production as a part time job. Main purpose of indigenous chicken rearing was both egg and meat production. An average monthly income was Rs. 950.00. Middlemen restriction, transport facilities, low price and low marketable output were major marketing problems. Loss of birds due to improper housing; predation and thief, disease attack, not enough veterinary services and lack of financial assistance were major production problems. It was observed that indigenous poultry market participation was significantly affected by sex of household head, bicycle ownership, market accessibility and source of market information. Market information services have to be established and strengthened in order to improve the poultry market participation. Moreover, Attention should be paid to improve the market accessibility for indigenous chicken in the study area.

References

Abeykoon, M. N. D. F., Weerahewa, J. and Silva, G. L. L. P. 2013. Determinants of market participation by indigenous poultry farmers: a case study in Anuradha pura district in Sri Lanka. Tropical Agricultural Research, 24 (4): 347-361.

Abeykoon, M. N. D. F., Weerahewa, J., Weligamage, P. and Silva, G. L. L. P. 2014. Willingness to pay for chicks of different indigenous chicken types: an application of experimental auctions. Tropical Agricultural Research, 26(1):162-174.

Bulumulla, P. B. A. I. K., Silva, P. and Jianlin, H. 2011. Genetic diversity at Toll like receptor 7 (TLR7) gene of Sri Lankan indigenous chicken and Ceylon jungle fowl (*Gallus lafayetti*). Tropical Agricultural Research, 22(4): 367-373.

Characterization of the smallholder poultry marketing systems in rural Malawi: A case study of Malingunde Extension Planning Area. Livestock Research for Rural Development, 16 (12): 2004.

District Statistical Information, Batti caloa, 2018.

Ethiopian indigenous ('Angete-melata') chicken and their F1 crosses to long term heat stress. PhD thesis. Martin-Luther University, Halle-Wittenberg, Berlin, Germany. 182.

Farrell, D. J. 2000. The energy and protein needs of scavenging laying hens. Livestock Research for Rural Development, 12 (4).

Garces, A., Casey, N. H. and Horst, P. 2001. Productive performance of naked neck, frizzle and dwarf laying hens under various natural climates and two nutritional treatments. South African Journal of Animal Science, 31(3): 174.

Menge, S. K., Kosgey, M. A. and Kahi, J.W. 2007. Influence of prices on market participation decisions of indigenous poultry farmers in four districts of Eastern Province, Kenya. Journal of Agriculture and Social Research (JASR), 12(1):1-10.

Pym, B., Wegener, P., Wethli, E. and Young, M. 2009. Improving village chicken production: A manual for field workers and trainers. ACIAR Monograph No. 139. Australian Centre for International Agricultural Research, Canberra. http://www.aciar.gov.au/publication/ MN139.