Socioeconomic perspectives of broiler farming in Peninsular Malaysia

Gabdo, B. H.*, Mansor, M. I., Kamal, H. A. W. and Ilmas, A. M.
Institute of Agricultural and Food Policy Studies, Putra Infoport,
Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia
*Corresponding author: bashirgabdo@gmail.com

Abstract

The chief constraint in Malaysian broiler production has been the high cost of feeds; any attempt to explore avenues of increased productivity is indeed imperative. Farmers' socioeconomic attributes and agricultural productivity are related concepts; farmers' attributes are among the many factors that drive agricultural productivity. This study identified the pattern of socioeconomic attributes of the farmers and used the attributes to test for mean difference or association in broiler output and mortality. Cross sectional data were collected from 328 broiler farms in 9 states of peninsular Malaysia in 2013. Categories of farmers' socioeconomic attributes such as age, education, system of broiler production, broiler production experience, business status, farmland status and number of broiler farms owned were assessed against broiler output and broiler mortality. The majority (69%) of the farmers were more than 40 years, 91% male, 59% with above 10 years of production experience, 83% educated not beyond secondary level and only 10% produced at large scale. Except in Johor, states did not show significant association between the socioeconomic variables and broiler output and mortality, hence the data were pooled. We found evidence that 7 socioeconomic variables (production experience, farmland status and scale of production ($p<0.01$), production system, age and number of farms ($p<0.05$) and business status ($p<0.10$) affected broiler output. Similarly, the study found only 2 socioeconomic variables: system of production and education ($p<0.01$) affected broiler mortality. The study demonstrates that socioeconomic attributes are imperative in broiler production. We recommend that farmers adopt large scale broiler production, close production system, broiler contract farming and obtain at least secondary education as socioeconomic avenues to enhance broiler productivity.

Keywords: Socioeconomics, output, mortality, broiler chicken

Introduction

Social and economic conditions of farmers play an integral part in determining the agricultural output of both crops and livestock; poultry production is no exception. Analysis of agricultural production may be incomplete without taking into cognizance the socioeconomic attributes of the farmers and the farming sites. Ratna (2015) asserted that farmers' socioeconomic attributes play crucial role in depicting the level of agricultural productivity; it is indispensable and measures the degree of mental aptitude and socioeconomic thoughts of the farmers. Furthermore, several social and economic factors such as land, livestock availability, educational status and number of farming families supplying farm labor play vital role in ensuring farmers' uptake of modern agricultural technologies and this directly and holistically is associated with the economic growth of such people (Ratna, 2015). Most agricultural production analyses rely on

factors of production but the decision making process which is often embedded in the socioeconomic parameters is mostly neglected. Poultry production in Malaysia is faced chiefly with the problem of high cost of feeds (70% of total cost) contributing to high cost of broiler production; thus any attempt geared towards increased productivity of broiler farms is indeed imperative. In view of the foregoing cost implication and coupled with the role played by socioeconomic attributes of farmers in agricultural productivity, the objectives of this study were to identify the pattern of socioeconomic attributes of the broiler farmers and test the mean difference or association between socioeconomic attributes and broiler output and mortality in peninsular Malaysia.

Methodology

Study area and sampling method

This study was conducted in 2013 in the peninsular Malaysia; an area hosting 80% of human population and economic activities in the country. It is further divided into four regions: North, South, Central and East Coast regions. The study was conducted in nine states namely, Melaka, Negeri Sembilan, Perak, Johor, Penang, Pahang, Kelantan, Selangor and Kedah; spread across the four regions. The sampling technique for this study was guided by the information in Table 1. The table shows the locations of broiler farms and their production capacities in the peninsula. Johor and Perak had the highest number of farms in descending order of magnitude; together they constituted about 44% of the total number of farms and 56% of broiler production in the peninsula. Based on Table 1 and in line with Yamane (1967) sample size equation, a total of 352 respondents were estimated but only 328 of them responded positively for the data collection. Thus, a stratified simple random sampling was designed to select the 328 farms; each as a respondent for the study. In the selection process scale (small, medium or large) of broiler production and system of production (open or close) were given consideration as the basis for the stratification.

Table 2 presents the socioeconomic attributes and their categories or groups or classes as used in this study. System of production, age of farmers, production experience, scale of production, business status, farmland status, number of broiler farms owned and farmers' education were some of the socioeconomic attributes used in this study. Their classes are presented in Table 2.

Method of data analysis

Data for this study were analyzed using both descriptive and inferential statistics. Descriptive statistics (percentage and frequencies) were used to summarize the attributes. As inferential statistics, the anova test was conducted to determine the variance in mean broiler output and broiler mortality under varying socioeconomic attributes. The data for the study were analyzed at state level but a pooled model was also analyzed to improve the results.

Table 1: Number of farms and capacity, 2012

States	Number of farms	Capacity (birds)	Number of respondents
Johor	703	37,248,492	94
Kedah	233	8,112,300	24
Kelantan	248	3,358,701	16
Melaka	134	5,139,104	22
N. Sembilan	187	9,927,950	49
Pahang	182	6,267,780	6
P. Pinang	200	5,915,030	29
Perak	592	25,663,226	45
Selangor	187	7,222,810	28
Terengganu	299	3,729,516	15
Total	2965	112,584,909	328

Department of Veterinary Services (DVS) (2012)

Table 2: Sample groups of socioeconomic attributes

Attributes	Categories
System of production	1 = Open system, 2 = Close system
Age of farmers (Years)	1= < 20 y, 2 = 21-30 y, 3 = 31-40 y, 4 = 41-50 y and 5 = > 50 y
Production experience (Years of production)	1= 1-5 y, 2 = 6-10 y, 3 = > 10 y
Business status	1 = Contract farming, 2 = Non-contract farming
Education (y)	1= Primary, 2 = Lower secondary, 3= Higher secondary, 4= STPM/Diploma, 5 = Degree
Farmland status	1= Owned land, 2 = Rented land
Scale of production (number of birds/cycle/farm)	1= Small scale (0-30,000 birds), 2 = Medium scale (30,001-125,000 birds), 3 = Large scale (>125,000 birds)
Number of farms	1 = ownership of only 1 farm, 2 = Ownership of more than 1 farm

.

Results and Discussion

In line with Ratna (2015), we used the socioeconomic attributes to describe the production pattern andcurrent situation in broiler farmsin peninsular Malaysia. Table 3 summarizes some of the socioeconomic attributes of broiler producers in peninsular Malaysia. The categories included age of farmers, education background, working experience, business scale and its capital sources. In terms of age, 40% of farmers were in the age class of 51 y and above while the young farmers accounted for only 8% of the broiler business. Onasanya (2009) grouped farmers' age into productive and non-productive ages; between 20 and 55 y as productive and above 55 as non-productive age. This indicated that majority of the farmers fitted in the productive age group. Furthermore, Ibitoye (2013) asserted that farmers in the productive age limit were strong enough to withstand the rigors of farm operations. Broiler production is a capital intensive operation; it is very difficult for new comers to enter into the industry because of high initial capital and low margin (Ahmed *et al*., 2008). Thus, the small number of young farmers may not be unconnected with the aforementioned.

Educationally, majority (56%) of the farmers gained secondary education. Furthermore, 27% of the respondents obtained primary school certificates, 9% with degrees and 8% with diploma certificates.Laogun (2012) reported that educated broiler farmers enjoyed access to information and communication technologies and adopted technology faster than the less educated farmers for improved productivity. In terms of farming experience, nearly 60% of the farmers engaged in broiler production for more than 10 y, about 20% of the farmers with 5-10 y production experience and another 20% of them with 0-5 y experience. Production experience can also be gained from training by extension agents, formal education, seminars, conferences, workshops and community resource persons. Ibitoye and Onimisi (2013) found that both training by extension agent and formal education were highly significantly related with broiler production but training via seminars, conferences, workshops and community resource personsthough were positively related but not statistically significant.

The result showed about 90% of farmers produced(birds per year)at the level of small and medium scale of production with only 10% of them producing at large scale of production. This would affect productivity since there were no economies of scale in small operations. This finding is similar to those of Ahmad *et al.* (2008) who stated that majority of the farmers reared their chicken in small and medium scales of production. Credit is an important tool that enables farmers to obtain proper inputs and working capital to achive an ideal yield. In this study, it could be seen that 52% of the broiler farmers sourced their credit independently, while 48% of the farmers relied on loans from institutional source to raise credit for broiler production.

Table 3: Summary of socioeconomic variables in broiler production in peninsular Malaysia, 2013

Category	Number	Percentage
Age of farmers (y)		
20-30	24	8
31-40	71	23
41-50	91	29
51 above	124	40
Total	*310*	*100*
Gender		
Male	258	91.17
Female	25	8.83
Total	283	100
Education level		
Primary School	85	27
Secondary School	173	56
Diploma	25	8
Degree	27	9
Total	*310*	*100*
Working Experience		
Less than 5 y	62	20
5-10 y	65	21
More than 10 y	182	59
Total	*309*	*100*
Scale of broiler business		
Small scale (less than	139	45
30,000)	137	45
Medium scale (30,001-	30	10
125,000)	*306*	*100*
Large scale (125,001		
above)		
Total		
Source of capital		
Owner / shareholder capital	146	52
Loan from other	137	48
institutional credit	*283*	*100*
Total		

The state of Johor had the highest number of significant variables; system of production ($p<0.01$), production experience (($p<0.01$), farmland status ($p<0.01$), scale of production ($p<0.01$), age ($p<0.05$) and business status ($p<0.05$) (Table 4), Kedah with production system ($p<0.05$) and scale of production ($p<0.01$), Melaka with scale of production ($p<0.01$) and number of farms ($p<0.01$) Negeri Sembilan with scale of production ($p<0.01$) and number of farms ($p<0.01$) and Penang with farmland status ($p<0.10$) and scale of production ($p<0.01$) were the significant variables. In Kelantan system of production ($p<0.01$) and Selangor scale of production ($p<0.01$) were significant.

Table 4: P values for test of comparison for socioeconomic variables on broiler output by states in peninsular Malaysia[1]

Variable	Johor n=88	Kedah n=19	Kelantan n=14	Melaka n=19	N.S. n=42	Pahang n=5	Perak n=42	Penang n=36	Selangor n=15	Pooled n=280
System of production	0.0000	0.0450	0.0000	0.2908	0.3610	-	0.2480	0.2093	0.7859	0.0212
Age	3df	3df	2df	3df	3df	2df	3df	3df	2df	4df
	0.0243	0.9509	0.7145	0.2861	0.7654	0.1013	0.1949	0.1197	0.1936	0.0268
Production experience	0.0017	0.9464	0.7433	0.6554	0.5021	0.4990	0.0420	0.7003	0.3565	0.0080
Education	4df	4df	3df	4df	4df	2df	4df	4df	4df	5df
	0.2287	0.4757	0.9800	0.7705	0.5682	0.8934	0.7153	0.5789	0.2934	0.7900
Business status	0.0424	0.1662	0.3436	0.8233	-	0.3393	0.8811	0.6938	0.5244	0.0799
Farmland status	1df	1df	1df	1df	1df	2df	1df	1df	1df	1df
	0.0046	0.5946	0.3436	0.3739	0.2963	0.2518	0.8550	0.0827	0.1735	0.0007
Scale of production	2df	1df	-	1df	2df	-	2df	2df	1df	2df
	0.0000	0.0007		0.0003	0.0000		0.0000	0.0000	0.0006	0.0000
Number of farms	0.5563	0.8297	0.1978	0.0006	0.0000	0.2998	0.2448	0.3206	0.1606	0.0231

[1]df equals 1 when not stated

Table 5: P values for test of comparison for socioeconomic variables on broiler mortality by states in peninsular Malaysia[1]

Variable	Johor n=88	Kedah n=19	Kelantan n=14	Melaka n=19	N. S. n=42	Pahang n=5	Perak n=42	Penang n=36	Selangor n=15	Pooled n=280
System of production	1df	1df	1df	1df	1df	-	1df	2df	1df	2df
	0.0519	0.2658	0.0479	0.2230	0.2577		0.4665	0.3172	0.1134	0.0007
Age	3df	3df	2df	3df	3df	2df	3df	3df	2df	4df
	0.7404	0.1941	0.5395	0.4482	0.7512	1.0000	0.5891	0.3033	0.1345	0.4208
Production experience	2df	2df	2df	2df	2df	2df	2df	2df	2df	2df
	0.0901	0.9721	0.3184	0.7546	0.7068	0.5000	0.8441	0.3592	0.5200	0.1318
Education	4df	4df	3df	4df	4df	2df	4df	4df	4df	5df
	0.4502	0.0437	0.8054	0.5544	0.7231	0.2500	0.6135	0.7757	0.9736	0.0052
Business status	0.7952	0.5457	0.0210	0.4098	0.1561	1.0000	0.7004	0.5542	0.2682	0.9694
Farmland status	0.3564	0.1252	0.0210	0.1000	0.8169	0.2394	0.0354	0.1143	0.6859	0.5409
Scale of production	2df	1df	-	1df	2df	-	2df	2df	1df	2df
	0.0006	0.8704		0.3920	0.7069		0.7124	0.1592	0.2459	0.1338
Number of farms	0.8231	0.0048	0.6587	1.0000	0.8150	0.2394	0.7961	0.3218	0.9351	0.1259

[1]df equals 1 when not stated

Scale of production was the only consistently significant variable across states and in the pooled model, while education was not significant across all states and even in the pooled model. The result of the pooled model reaffirmed the significant association between the socioeconomic variables and broiler output. We found at 5% level of significance between system of production and broiler output; farmers who produced broilers based on close system of management produced higher mean output relative to those operating under open system. The study found only 38% of the broiler farms operated closed system of production, yet produced nearly 60% of the broiler output. Although more expensive to invest and manage yet the close system provided better management for the broilers than the open system; they are less prone to diseases and mechanisms for temperature controls exist (TNAU, 2015). The result for age revealed moderate statistical association with broiler output. Younger farmers who were better educated, with better access to information technologies and dynamic in farm decision making produced higher than older farmers. We found a high association ($p<0.01$) between production experience and broiler output; an indication that farmers with more production experience produced higher broiler output than those with lesser number of production experience. The relationship between business status and mean output of broiler showed moderate association ($p<0.10$). This implied that contract farmers produced higher broiler output than non-contract (independent) farmers. This could be associated with the contractual agreement in contract farming that propels the farmers to manage well and work towards their contract terms unlike non-contract farmers with less commitment. A highly significant relationship was found between farmland status and broiler output; farmers who operated on owned land produced higher broiler output relative to those on rented lands. Other significant socioeconomic variables that determined broiler output were scale of production ($p <0.01$) and number of broiler farms owned ($p<0.05$). Despite the seemingly significant contribution of education to agricultural productivity, yet in this study, we found no evidence of significant relationship between education and broiler output. We found only system of production ($p<0.01$) and education ($p<0.01$) were significant variables; thus, vital in explaining the variation in mortality of broilers (Table 5). This implied that farmers who operated a close system produced with lower mean mortality (3.8%) relative to farmers on open system (4.6%). Again, this might be connected with the better management in the close system relative to the open system mentioned earlier.

Conclusion

The study identified production experience, farmland status, scale of production, production system, age, number of farms and business status as major socioeconomic variables that drove broiler output. Similarly, systems of production and farmer's education were identified as socioeconomic variables determining broiler mortality in the study area. Conclusively, assessment of socioeconomics in broiler farming deserves attention; socioeconomic status dictates the level of broiler production. Thus, measures for improved socioeconomic status of broiler farmers are advocated in this study. For instance, farmers should strive to gain better education or training, engage in contract farming and embark on close instead of open system of broiler management. These are some pertinent socioeconomic measures for improved output and less mortality in broiler production.

References

Ahmad, Sarfraz, Tahir Zohoor Chohan and Ikram Ali., 2008. Economic analysis of poultry production in Mirpur, Azad Jammu Kashmir. *Pakistan Journal of life and Social Sciences*, Vol. 6, No. 1, pp 4-9

DVS (2012). Department of Veterinary Services. The broiler industry in peninsular Malaysia, Status of the industry in 2012 and prospects for 2013. End of year statistics and report, Kuala Lumpur, Malaysia

Ibitoye, S. J. and Onimisi, J. A., 2013. Influence of training on farmers' productivity in poultry production in Kogi State, Nigeria. *International Journal of Poultry Science*, 12(4): 239-244

Ibitoye, S.J., 2013. Survey of the Performance of Agricultural Cooperative Societies in kogi State, Nigeria. *Eur. Scientific J.* (ESJ)., 8928: 98-114

Laogun, E.A., 2012. Rural Youth Training Needs for Rural Community Development. *Nigerian J. Rural Sociol*., 3: 57-63

Onasanya, A.S., 2009. Perceived effect of Training related health problems of farmer's productivity in Yewa North Area of Gun State, Nigeria. Unpublished M. Phil Thesis, Faculty of Agricultural, University of Ibadan

Ratna, J., 2015. Socioeconomic factors affecting vegetable production in Kullu District of Himachal Pradesh. Department of Agricultural Economics, Extension Education and Rural Sociology, CSKHPKV, Palampur. Unpublished PhD Thesis.

TNAU (2015). Tamil Nadu Agricultural University. Poutry chicken: System of poultry rearing. Animal husbandry. TNAU agricultural portal.

Yamane (1967). Statistics: An introductory analysis, 2nd Ed., New York: Harper and Row.