Economic cost & profit assessment of poultry farming in namakkal district

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ABSTRACT: Poultry farming in India has transformed from a mere tool of supplementary income and nutritious food for the family to the major commercial activity generating the required revenue. Changing food habits, rising income of the middle class Indian, presence of private players, rising market demand of the Indian poultry produce in the export market are some of the contributing factors to the growth of the industry. Therefore, the study intends to examine the socio-economic background of the poultry farmers; to analyze the investment, cost and profit of the farmers and to identify the problems faced by the farmers. The study based on primary and secondary data collected from 120 poultry farmers by adopting purposive sampling during November 2013 to January 2014. Cost of feeding constitutes a major problem to most of the poultry farmers as it accounts for a larger percentage of total cost of production, since poultry birds cannot do without food.

KEYWORDS: Poultry, Cost, Investment, Profit, Livestock

1. INTRODUCTION

The poultry industry in India has emerged as the most dynamic and rapidly expanding segment of livestock economy as evident from the production level touching about 40 billion eggs and 1 billion broilers with a compound annual growth rate of 8 percent and 15 percent respectively. What was once started as a novelty in the 1970's - egg and broiler production - has now turned out to be a highly organized agri-business. But in spite of all these developments and relatively competitive value of the Indian poultry products (especially egg), the relative position of India in the world trade of poultry products is not so encouraging. Indian poultry industry has been growing at annual varying rates of 8-15 percent and this growth in the past few decades made India 4th largest producer of eggs and 5th largest producer of poultry broiler.

The structure and costs of production in the Indian poultry meat industry vary from region to region. Production costs in the Southern, Western, and Eastern regions of India are very competitive with those in other countries, including the US. The technical efficiency in poultry in these Indian regions

appears to be better than Brazil where the cost of production is the cheapest. Factors driving the industry's expansion include quick growth in per capita income. The Southern region has the lowest total costs despite facing the highest feed prices (both corn and soybean meal generally must be shipped from greater distances than in the other regions). Day of Old Chick (DOC) costs are lowest in the South, and mortality costs are also lower compared to Eastern and Western regions.

The greater cost efficiency in the South stems both from favourable climate and better management by the integrated poultry operations. Relatively low energy costs for both heating and cooling, hold down other costs in the South. Most of the poultry meat in India is marketed to consumers in the form of live birds- termed as ―wet-market‖, with only a small share of output now marketed as chilled, frozen, or further processed products. The costs of moving live birds, including transport, shrinkage, and mortality costs, severely limit inter-regional movements. As a result, Indian poultry markets are regional, rather than national in scope and there is limited potential for low-cost producers to market their product in higher cost regions. Low poultry prices in South India, largely due to the prevalence of poultry integrators in the region, are reported to have stimulated rapid growth in consumption. Several sources indicate that per capita poultry consumption in South India is about 4 kg, which is about four times the national average.

In South India, Tamil Nadu state is leading in broiler integration in the country which has Coimbatore as a major poultry pocket. The broiler prices in Coimbatore act as a reference price for others to fix the wholesale and retail prices in the neighbouring states. The farm price formation is facilitated by the Broiler Coordination Committee (BCC). Under the BCC voting system, opinion of the majority rules the rate for the day. The BCC producer price then becomes the benchmark for setting producer, wholesale, and retail prices for markets in the Southern region, including Chennai, whole of Tamil Nadu and Kerala, and to a lesser extent Bangalore. There is no evidence that the BCC engages in monopoly pricing, judging from the relatively low live-bird prices, retail prices, and margins in Coimbatore compared with other regions. Monopoly pricing seems to be discouraged by the strong price sensitivity of demand for poultry.

In Namakkal district, while the demand for egg and chicken meat is increasingly commendably, poultry farmers here are forced to restrict their expansion processes owing to escalating land and construction costs over the last five years in Namakkal Zone. The Namakkal Zone comprises of nearly 699 poultry farmers who own the 4.01 lakh layer birds (egg laying birds) of which Namakkal district houses nearly 75 percent of the farmers and 81 percent of the total bird strength. But only 40

farmers – 38 in Namakkal and one each in Erode and Annur (Coimbatore) – are expanding this year despite the mounting investments. However of the nearly 30 NECC zones across India, Namakkal takes credit as one of the only two zones in the country – the only other zone is Barwala near Delhi. Farmers in the other zones have frozen their expansion processes owing to similar issues.

According to a farmer would have to invest around Rs. 4.5 crore to expand his layer bird strength by one lakh birds, in addition to the investment for lands. Pointing out that the construction cost of sheds increased from Rs. 200 to Rs. 300 in nine years (2000-08) it rocketed from Rs. 300 to Rs. 450 between the years 2009-11. Since the year 2000 the Namakkal NECC zone's targeted annual expansion this year would be the second highest (by 50.82 lakh birds) compared to the average strength of the previous year. The best-ever expansion of the bird strength of this zone was in 2005-06 when the average strength increased to 307.34 lakh – that is 72.85 lakh more than the previous year's strength of 234.49 lakh. But it is said that the massive expansion was before escalation of land and construction costs. With this background, the economics of poultry farming in Namakkal district is undertaken.

2. OBJECTIVES OF STUDY

The main objective of the study is to find out the socio-economic background of the poultry farmers; to analyze the investment, cost and profit of the farmers and to identify the problems faced by the poultry farmers.

3. HYPOTHESIS

The major problem faced by the farmers were high feed cost and low egg prices, labour problems, investment, feed and marketing, insufficient power supply.

4. LITERATURE STUDIES

Varinder Pal Singh et al., (2010) analysed the cost and returns of different sizes of broiler farms in the Punjab state based on the primary data collected from 140 broiler farmers for the period March 2008 to February 2009 in three districts, viz. Ludhiana, Hoshiarpur and Muktsar. The study has shown that the total fixed investments per bird have been highest on small farms, followed by medium and large farms. The total variable cost per bird has been reported highest on small farms, followed by medium and large farms. The total cost of meat production per bird has been found highest on small broiler farms, followed by medium and large farms. The net returns per bird over the variable costs have been recorded highest on large farms as economics of scale prevails on these

farms. The meat-feed price ratio and benefit-cost ratio have been found to increase with increase in farm-size of broiler farms, which indicates better utilization of inputs on large farms. On the basis of net present value, benefit-cost ratio and internal rate of return, investment in broiler farming has been found profitable in all farm-sizes. The small broiler farms have been observed highly sensitive to increase in costs and decrease in net returns. The study observed that broiler farming was profitable venture and has a bright future in the Punjab agriculture for improving economic status of the farming community

Sarfraz Ahmad et al., (2008) their study based on primary data collected from 60 poultry farms in Mirpur district, Azad Jammu & Kashmir (AJK). Farms were categorized as: small farms having a population of 2000 birds; medium farms having a population of 2001 to 4000 birds; and, large farms with population of 4001 to 6000 birds. Results indicate that this business was adopted as major source of income; however, most of the commercial poultry farms have been closed due to lesser profits and even heavy losses during last few years. Majority of poultry farms (83 %) are small farms and the farmers are forced to rely on non-institutional source of credit. Seasonal and cyclical price fluctuations in input and output are found to be higher. Poultry producers are major stakeholders having no role in price fixation. The estimated input output ratio of poultry production is 1:1.12. The per rupee return does not look promising for investors of this sector especially in case of small farmers who are unable to reap the benefit of economy of scale.

Rick (2002) while studying the strategies to manage expensive feed on farm reported that in order to measure broiler performance the returns (profits) ought to be used rather than performance or costs. The author suggested alternative way of measuring profits in terms of margin over total costs. Further, he demonstrated that the length of grow-out period and down time significantly influenced the number of broiler cycles per year. A 38-day cycle length with an 11 day clean out would lead to an extra crop per year. The alternative to commonly used profitability (per kg body weight) was to calculate unit profitability by using the formula [(Income from bird-All costs)/m2]/cycle length. He demonstrated the application of this concept in measuring broiler performance. The paper has illustrated the effect of changes in broilers on-farm performance and the producer strategies to continue to be in profitable business in times of falling feed price ratio.

Taru et al., (2010) examined the economics of broiler production in Meme Division of Cameroon. The specific objectives of the research were to determine the efficiency of resource use in broiler production. Primary data were collected from a sample of 116 broiler farmers using a multi-stage random sampling method. The data were analysed using regression model. Marginal analysis of

input shows that the farmers were inefficient in their production practices as indicated by the ratio of marginal value product (MVP) and marginal factor cost (MFC). The ratio revealed the over utilization of chicks, feed and labour. Major problems facing broiler producers were low market prices, high cost of feed, veterinary services, transportation, lack of access to credit and extension services.

5. METHODOLOGY

The present study based on primary data and secondary data collected from 120 poultry farmers by adopting purposive sampling since all the farmers were not mentally prepared to respond to the questionnaires. A well-structured questionnaire was prepared and was pre-tested. After incorporating the necessary changes in the pre-tested questionnaire, it was administered and required information about the framing was collected from the respondents during November- January 2014. Besides averages and percentages, techniques like discriminant analysis and Garrett's Rating Scale were used.

6. RESULTS AND DISCUSSIONS

6.1 SOCIO-ECONOMIC PROFILE OF THE POULTRY FARMERS

According to the world watel institute, 74 percent of the world's poultry meat and 68 percent of eggs are produced this way. In 2000 there were 50.4 million tons of eggs produced in the world (executive guide to world poultry trends, 2001) and an estimated 53.4 million tons of table eggs were produced doing 2002. In 2009, an estimated 62.1 million metric tons of eggs were produced worldwide from a total laying flock of approximately 6.4 billion hens. Hence an attempt was made in this section to explore the socio-economic profile of the poultry farmers so as to identify important parameters crucial for improving their farming system. A total of 120 farmers were surveyed, which as shown in table 1.

Table 1 Socio-Economic Profile of the Respondents

Socio-Economic Status	Characteristics	Frequency	Percent
Age	Below – 35 Years	11	9.2
	36 Years – 45 Years	46	38.3
	Above – 46 Years	63	52.5
Educational Qualification	Secondary	23	19.2
	Higher Secondary	43	35.8
	Graduate	53	44.2
	Post Graduate	1	.8
Occupation	Businessmen	58	48.3
	Agriculturist	51	42.5
	Government	3	2.5
	Private	6	5.0
	Professionals	2	1.7
Monthly Income	Rs.1000 – Rs.50,000	72	60.0
	Rs.50,001 – Rs.1,00,000	36	30.0
	Rs.1,0,001 – Rs.1,50,000	7	5.8
	Rs.1,50,001 – Rs.2,00,000	5	4.2
Household Size	2- 4 Persons	55	45.8
	5-7 Persons	50	41.7
	8-10 Persons	15	12.5
Experience	Less than 5 years	1	.8
	5-10 years	18	15.0
	10-15 years	74	61.7
	15-20 years	20	16.7
	Above 20 years	7	5.8
Extension Contact	0-5 Visits in a day	13	10.8
	6-10 Visits in a Week	45	37.5
	11-15 Visits in a Month	57	47.5
	16- Above Visits in a Year	5	4.2
Total		**120**	**100.0**

Source: Estimation based on Field survey

The result shows every farmer in this study area was young and is still in their active age. The implication is that younger farmers are likely to adopt modern techniques factor. The findings is in agreed with sane et al., (2007) that majority of farmers were within the age group of between 36 years to above 46 years are still in this active age and more adoptive to new techniques. Information about educational qualification of selected poultry farmers were analysed and found that all (100 percent) the farmers were educated. It is evident that the level of education will contribute

significantly to decision making capacity of a farmer. This findings support Obinne, (1991); Alabi and Aruna (2006) and Ndlahitsa (2008) that the level of education determines the quality of skills of farmers, their abilities and low well they adopt innovations and technologies around them. The poultry farming is a part time job and most of the farmers do not depend on the business and agriculture as the sole mean of their livelihood. This may be due to the fact that farmers usually want to add to their farm income. These findings agreed with the findings of amaze (2000). That it is common for some farm household to fulfill their earnings from farming occupation for their livelihood.

Majority 90 percent of the respondents were earning from Rs. 10,000 to Rs.1, 00,000/-. The findings of the study revealed that majority of them were good earners from poultry farming. The farmers will spend less on food, education and other living expenses on the dependents. These expenses may account for high savings and they can spend for farming. The finding back up the result of Igodan et.al (1988) that more educated farmers tends to have smaller families and Arther (2006)observed that small family size enjoy better economic and social lives which have greater influence on better understanding of environmental conditions. Poultry farming experience of selected farmers that nearly 62 percent of them having 10-15 years and the findings support Oluwatayo et.al (2008) that farmers with were experience would be more efficient, better knowledge of climatic conditions and market situation and then expected to run a more efficient and profitable experience. The study shows that extension contact which is channel through which agricultural innovations and information are passed to farmers for improvement in their standard of living, production and productivity of the farms.

6.2 DISCRIMINANT ANALYSIS

Discriminant analysis was used to identify the variables that distinguish the low return farming from high return farming. The classification of the respondents was done on the basis of the returns on the poultry farming. The first group consisted of those respondents who were getting low returns while the second group consisted of all those who were getting higher returns. The poultry farming was hypothesized to be function of the age of the respondents (A), Investment (I), and Cost (C), Monthly income (MI), Experience (EX) and Education (E).

Table 2 shows the group means, Wilk's Lambda and univariate F ratio for each independent variable. The group means besides profiting the two groups, also identifies the variables with largest

differences in the group means. The Wilk's Lambda and univariate ANOVA is used to identify the variables with the largest differences in the group means.

Table 2 Group Descriptive Statistics and Test of Equality of Group Means

Group Variable	Investment	Cost	Age	Education	Monthly income	Experience
Low Returns	3.4697	7.4510	44.2564	4.2436	4.5688E4	3.0513
High Returns	7.5293	19.7345	45.9524	4.3095	7.5786E4	3.2381
All	4.8906	11.7503	44.8500	4.2667	5.6222E4	3.1167
Wilk's Lambda	.630	.408	.988	.998	.896	.986
F	69.276	171.041	1.435	.198	13.709	1.668
Significance	.000	.000	.233	.659	.000	.199

Source: Estimation Based on Field Survey

From the table it is evident that of the six variables introduced to distinguish low return and high return poultry farming, only three variables namely investment, cost and monthly income showed significant Univariate differences between two groups. The remaining variables age, education and experience did not emerge as significant factors. Based on the above group means and standard deviation, the standardized canonical discriminant function which represents a linear composite of the original data variability within group's variability has estimated as follows:

$$Z=-60.739+0.299(I)-0.366(C) +1.092(Age) +12.163(E)-0.00005(MI)$$

Wilk's   Lambda=.395

Chi-square Value=106.871

Eigen Value=1.553

Canonical Correlation=.778

(Significant at 1 percent level)

In the above function the variables investment, experience, age and education had positive sign indicating that these variables had higher discriminating powers between groups. The variable cost and monthly income had negative sign implying that this variable acted as a suppressor variable. The Wilk's lambda and chi-square value indicator that the function has a significant at 1 percent level. The canonical correlation associated with discriminant function was 0.778 implying that nearly 78 percent of the variation in dependent variable was explained by the model. The relative importance

of each independent variable in discriminating between the groups was assessed in terms of their factor loadings and is shown in table 3.

Table 3 Discriminant Loadings and Potency Index for the Selected Variables

Independent Variables	Factor Loading	Potency Index	Rank
Investment	.972	.945	1
Cost	.619	.383	2
Monthly income	.275	.0756	3
Experience	.096	.009	4
Age	.089	.007	5
Education	.033	.001	6

Source: Estimation based on Field Survey

While evaluating the variables on the basis of their factor loadings, any factor is considered to be a substantive discriminator of the factor loading is either equal to or greater than ± 0.30. Evaluating the factor loadings on the basis of the above criterion, the variables that distinguish low return from that of high return poultry farming were investment and cost of these variables investment accounted for nearly 95 percent of the variation in profit followed by cost (38 percent). Thus higher returns in poultry farming depend on investment and cost efficiency. The validity of the above discriminating function was evaluated ay group centroids (group means) and the results are shown in table 4.

Table 4 Classification Results

Groups	Predicted Group Membership		Total
	Low return	High return	
Low return	98.7	1.3	100.0
High returns	23.8	76.2	100.0

Source: Estimation based on Field Survey.

The classification accuracy percentage of the discriminant function for the sample group was (91 percent). Thus the discriminant function was quite efficient in classifying respondents into low return and high return poultry farmers.

6.3 COST & PROFIT ASSESSMENT OF POULTRY FARMING

Table 6 shows the gross margin analysis of poultry farmers per bird. The fixed cost item section showed that permanent labour has the highest contribution to the cost of production with 15.69%. The Table also revealed that variable cost items like cost of feeding is contributing second highest with 15.53% and vaccination/ meditation which is the most important cost of production is contributing third highest with 14.56%. This is followed by interest on investment on bird, interest

on working capital, cost of electricity/diesel, price of day old chicks, and cost of water and health coverage contributing 13.79%, 12.49% 12.21%, 12%, 1.74% and 0.96% respectively. Marketing cost are the expenses required in bringing the goods and services from farm to market. This term frequently used to estimate the expenditure incurred on movement of commodity from farm gate to the ultimate consumer. The marketing cost like transportation and advertisement cost contributing 0.87% and 0.16% respectively. The revenue items also revealed that egg is contributing higher at 90.19% while the sale of culled birds contributing 7.36%, sale of manure contributing 1.82% and sale gunny bags 0.62%. The findings showed that the total variable cost constitute the highest proportion (519.36) of the total cost of production. Permanent labour and Cost of feeding accounted for highest in the total cost of production. This agrees with Intisar (1995); Sharabeen (1996); Yusuf and Malomo (2007) and Adepoju (2008) that feed cost comprises the highest share in the total cost of poultry production.

Table 7 Average Cost and Revenue of Poultry Farmers per Bird

Cost items	Average	Percent
Fixed Cost (1)		
Labour	97.81	15.69
Total Fixed Cost	**97.81**	**15.69**
Variable Cost (2)		
Price of day old chicks	74.87	12
Cost of feed	96.83	15.53
Cost of Electricity/ Diesel	76.15	12.21
Cost of Vaccination / Medicines	90.78	14.56
Interest on Working Capital	77.88	12.49
Interest on Investment on Birds	86	13.79
Cost of Water	10.85	1.74
Health Cover	6	0.96
Total Variable Cost	**519.36**	**-**
Marketing cost (3)		
Transportation Cost	5.42	0.87
Advertisement Cost	1	0.16
Total Marketing Cost	**6.42**	**-**
Total Cost (1+2+3)	**623.59**	**100**
Revenue items		
Sale of Egg	794.09	90.19
Sale of Gunny Bags	5.5	0.62
Sale of Manure	16.06	1.82
Sale of culled Birds	64.77	7.36
Total Revenue	**880.42**	**99.9**
Gross Margin	**361.06**	**-**
Net Revenue	**256.83**	**-**

Source: Field Survey

The result also showed that majority of the revenue is generated through the sale of eggs. The findings also support the result of Intisar (1995); Sharabeen (1996); Yusuf and Malomo (2007) and Adepoju (2008) that sale of egg contributed highest share to total revenue. The result further showed that the average gross margin per bird was 361.06 and net revenue was 256.83. The result agrees with the findings of Reddi (1986) and Rajendran and Samarendu (2003) who found that gross margins and net returns increases with increase in farm size and was profitable.

6.4 PROBLEMS FACED BY THE POULTRY FARMERS

Poultry Farmers were asked to rank the problems faced by them while doing their farming. The problems were listed and the farmers were asked to rank these problems in their order of priority. The ranks were then converted into percent position and from the percent position the individual scores were determined on a scale of 100 points by using Garrett's Rating Scale. The average scores and the ranks corresponding to each problem are presented in table7.

Table 7 Problems of the Poultry Farmers

S.No	Problems	Mean	Rank
1.	Availability of Raw Materials	38.3083	11
2.	Improved Technology	32.3583	13
3.	Control Measures	48.025	7
4.	High Feed Cost and Low Egg Prices	73.775	1
5.	Lack of Transport/Storage Facilities	47.8333	9
6.	Investment	60.9417	3
7.	Labour Problem	61.5915	2
8.	Power Supply	53.2667	5
9.	Feed and Marketing	57.9	4
10.	Export Facilities	48.0167	8
11.	Health Coverage	43.625	10
12.	Managerial Problems	48.125	6
13.	Extension and Training Facilities	35.5833	12

Source: Based on Field Survey

The major problem faced by the farmers were _High Feed Cost and Low Egg Prices' (1st rank), followed by _Labour Problems' (2nd rank), _Investment' (3rd rank) _Feed and Marketing' (4th rank), insufficient _Power Supply', (5th rank), _Managerial Problems',(6th rank), _Control Measures', (7th

rank), lack of ‗Export Facilities', (8ᵗʰ rank), ‗Lack of Transport/Storage Facilities', (9ᵗʰ rank), ‗Health Coverage', (10ᵗʰ rank), ‗Availability of Raw Materials', (11ᵗʰ rank), ‗Extension and Training Facilities' (12ᵗʰ rank) and cannot utilize ‗Improved Technology', (13ᵗʰ rank). In short the poultry farmers wanted to get high price for eggs, solution for labour problems, to encourage investment and continuous power supply for their industry production.

7. CONCLUSION

The economic analysis of poultry has been carried out on the basis of primary data collected from Namakkal district. It was found that majority poultry farmers have adopted this business as a primary source of their income and fall in the category of large group (1lakh to 4 lakhs birds). Moreover, they are financially sound and few of them forced to rely on institutional and non-institutional source of credit due to the limited credit facility extended by the financial institutions. Cost of feeding constitutes a major problem to most of the poultry farmers as it accounts for a larger percentage of total cost of production, since poultry birds cannot do without food. Majority of the poultry egg farmers identified high cost of production especially cost of feed ingredients as their major constrain. Therefore, government should endeavour to subsidize inputs such as feed ingredients and this can be achieved through poultry farmer's participation in crop production. The study **recommends** the following:

- ☞ Poultry producers generally should have access to credit facilities especially soft loans. This will help them to increase their stock size, slaughterhouses, and transportation facilities and feed processing. At present the employees are suffering with poor wages and working more than 12 hours per day. Hence, it is suggest that the NECC and association should involve directly regularizing the wages and working hours of labours.
- ☞ The major problem faced by the poultry farm owners is power cut during summer season and irregular power supply, which very much affect the poultry production. Hence, it is suggested that the poultry farm owners may avoid the power problems through an alternative energy sources like bio-gas with the help of government.

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