AN ANALYSIS OF COST AND ECONOMIC RETURNS OF POULTRY FARMING IN NAMAKKAL DISTRICT OF TAMILNADU

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Abstract:

In India, Poultry sector occupies an important role in all classes of people in the society particularly by the economically weaker section of the society and also bring about desired level of socio-economic changes in rural areas which are vital for rural development and rural prosperity. In Poultry farms, 80 per cent of the employment were directly generated and 20 per cent in the provision of feed, pharmaceuticals, equipment and other services. The annual growth rate of Egg production was 6 per cent per year. The main objectives of the study are to analyse the cost and Economic Returns of the Poultry Enterprise in Namakkal District of TamilNadu from July 2019 to March 2020. The present empirical study was based on cross-sectional data were obtained through interview method. The investment analysis of the poultry units would serve as a measure of economic viability of the poultry units. The following investment criteria are generally used for ascertaining the economic viability of various investments of the variables. They are i) 1. The criteria of minimum economic price of eggs, ii) Criteria of minimum economic farm size and iii) Criteria of break-even analysis. The concluded that the composition of investment has varied slightly across the different size group of the farms. As compared to others, the medium sized farms showed relatively greater importance to poultry equipments, while small sized farms attached relatively greater importance to poultry shed. The data indicate the economics of scale in capital investment.

Key Words: Cost – Benefit Analysis, Minimum Economic Criteria, Break Even Analysis,

Small, Medium and Large Size of the Poultry Farmers, Production Function and Returns to Scale.

Introduction

In India, Poultry sector occupies an important role in all classes of people in the society particularly by the economically weaker section of the society and also bring about desired level of socio-economic changes in rural areas which are vital for rural development and rural prosperity. Poultry farmers are easyness to adopt and quicker returns from the poultry farms. Poultry farming not only gives additional income to the producer but also it helps in solving their unemployment and underemployment problem of rural people including women.

India is the sixth place of meat producer in the world (as Per FAO 2014). In 2016-17, the export of poultry product was around Rs. 532 crore. India is the third largest producer of Egg and fifth place of poultry producer in the world. In India, the structure of poultry industry vary from region to region where both organised and traditional poultry farming[1]. Small scale producer of poultry were produce the bulk amount and the large scale producers were sale of their out-put in some other region. In Poultry farms, 80 per cent of the employment were directly generated and 20 per cent in the provision of feed, pharmaceuticals, equipment and other services. The annual growth rate of Egg production was 6 per cent per year[2].

Global production of eggs reached 73 million tonnes and per capita consumption of eggs increased from 82 to 162 eggs between 1961 and 2016. India is the third-largest egg producer in the world and it was 88.14 billion after China was 530 billion and the USA is 102 billion. The total egg production of India was 1,832 million in the year 1950-51 and increased substantially for about 88,139 million in during 2016-17. The annual per capita availability of eggs has increased from 5 eggs per annum in 1950-51 to 69 eggs per annum in 2016-17. Tamil Nadu has the rank of first in terms of egg production in the country, that is 18.9 percent and it was followed by Andhra Pradesh was 18 per cent and Telangana has been 13.4 per cent. Namakkal is the single largest egg producer of Tamil Nadu with a total production of 1.25 lakhs and accounted for 77.81 per cent followed by Erode district was 7.45 per cent and Dharmapuri was 2.38 per cent during 2016-17. In TamilNadu, Per capita availability of egg

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[1] National Action Plan for Egg and Poultry – 2022 for Doubling Farmers Income by 2022, Department of Animal Husbendary, Dairying & Fisheries , Ministry of Agriculture & Farmers Welfare, Government of India.

[2] Report of the Working Group on AH & dairying, 12th Five Year Plan

was 237 eggs per annum during the year 2016-17, which are higher than India's average availability. As per the recommendations of ICMR, the per capita requirement of eggs is 182 eggs per year[3].

Review of Literature

Vikash Pawariya and Jheeba SS (2015), in their study on "Economic Analysis of Cost- Return, Income and Employment in Poultry Enterprise in Jaipur District of Rajasthan State". Indian poultry farming occupies an important role in rapid growth with low investment. Poultry sector provides employment opportunity of 5 million people of the country. The study was based on both primary as well as secondary sources of information from the period of 2010-11 to 2012-13. The collected data were analysed and using the statistical tool like simple percentage method, Average and ratio method. The study concluded that, cost and economic returns of the poultry enterprise were the feed cost is the major cost and layer farmers are needed the high   investment. Income and employment generation was increased over period of study[4].

Malarvizhi V and Geetha K.T (2015), in their reveals that the socio-economic conditions of the poultry farmers of Namakkal district of TamilNadu. This study analysed the investment, cost and profit of the farmers and to identify what are problems faced by the poultry farmers of Namakkal district. The study based on both primary as well as secondary informations collected from the 120 poultry farmers and to adopting the purposive sampling methods from the period of November 2013 to January 2014. The study was concluded that, 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[5].

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[3] Sakunthaladevi S., *et al.*, (2019) Economic Analysis of Layer Farming in Namakkal District. International Journal of Agriculture Sciences, ISSN: 0975-3710 & EISSN: 0975-9107, Volume 11, Issue 11, pp.- 8558-8562

[4] Vikash Pawariya and Jheeba SS, "Economic Analysis of Cost- Return, Income and Employment in Poultry Enterprise in Jaipur District of Rajasthan State", International Journal of Agricultural Science and Research, Volume. 5, Issue 1, Feb 2015, pp no.73-79.

[5] Malarvizhi V and Geetha K.T, "Economic Cost and Profit Assessment of Poultry farming in Namakkal District", Journal of Management and Science, Volume .5. Issue. 2, June 2015, pp. 42-55.

Viney sharma[6] carried out a break-even analysis on 145 poultry farms in Ludhiana district and on 60 poultry farms in Faridkot district of Punjab, which were selected at random by following proportionate stratified random sampling procedure to find out the minimum level of production of eggs required to recover the total fixed investment employed in different sized poultry farms. The study came with the result that the break-even volume of egg production in small, medium and large sized poultry farms in Ludhiana are respectively 688, 1970 and 4335 thousand eggs. The study further revealed that the large size farms required less time to reach break -even and to recover fixed capital investment than the small and medium sized farms mainly on account of the prevalence of economics of scale in egg production.

A study on economic efficiency in poultry farming was undertaken by **Surat Singh[7]** in Ambala and Gurgaon districts of Haryana during 1987-88 by selecting 84 sample farms – 53 small, 21 medium and 10 large farms using two stage proportionate stratified random sampling procedure. By applying Cobb-Douglas production function for analysing technical efficiency an profit function with dummy variable (representing economic efficiency) for analyzing economic efficiency in layer production, he came with the conclusion that the investment in farm building and equipment together with feed cost area the most important input variables in the layer poultry farming. He found that there is the operation of law of constant returns to scale in layer farming. In the study came with the conclusion that all layer farms are economically efficient and the economic efficiency increases with the size of the farm.

Shanmugam and Suresh Kumar[8] while examining the supply - price response of poultry products, worked out the economics of production in layer and broiler farms. By collecting cross-section data from 50 layer farms and 50 broiler farms, selected at random from salem district of Tamil Nadu and time-series data on supply of eggs and poultry meat, price of egg and chicken meat for the period 1971 -1990 and applying input - output ratio technique to cross section data for assessing economics of production and cobb - Douglas production function to time-series data for estimating the supply-price response, the study came with the result that the production of layer was economically more profitable than the broiler production as the returns per rupee of investment in layer farming (Rs.I.29) is greater than the return per

[6] Viney Sharma, "Break-Even Analysis of Egg Production in Punjab", **Poultry Guide,** Vol.31, April, 1994, PP.43-45.

[7] Surat Singh, "Resource Productivity, Returns to Scale and Economic Efficiency in Poultry Farming in Haryana", **Agricultural Situation in India,** Vol.52, No.7, October, 1995, PP.479-484.

[8] T.R Shanmugam and D.Suresh Kumar, "Price Analysis of Poultry Products in Tamil Nadu", **Madras Agricultural Journal**, Vol. 80, No.8, August, 1993, PP. 434-442.

rupee of investment in broiler farming (Rs.l.21). The study further revealed that the supply of eggs as well as broiler meat are price elastic and the poultry sector is characterised by increasing returns to scale.

Objectives of the study

The main objectives of the study are to analyse the cost and Economic Returns of the Poultry Enterprise in Namakkal District of TamilNadu from July 2019 to March 2020.

Methodology of the study

The present study is an empirical study based on cross-section data obtained through interview method. The data collection was done with the help of well-structured and pre-tested interview schedule.

The investment analysis of the poultry units would serve as a measure of economic viability of the poultry units. Keeping this in view, the following investment criteria are generally used for ascertaining the economic viability of various investments. They are i) 1. The criteria of minimum economic price of eggs, ii) Criteria of minimum economic farm size and iii) Criteria of break-even analysis.

Minimum Economic Price of Egg

The minimum economic price of egg is nothing but the average cost of production of egg. It is also known as cost per egg.

$$\text{Minimum Economic Price of Egg} = \frac{\begin{matrix} Total\ Operational\ Cost & - & Income\ from\ by-\Pr oducts \\ Per\ Layer & & Per\ Layer \end{matrix}}{Total\ Number\ of\ Eggs\ Per\ Layer}$$

Minimum Economic Farm Size

The minimum economic farm size is obtained by equating and solving the estimated equations of the following regression is $TC = \beta_0 + \beta_1 X$ and $Y = \beta_0 + \beta_1 X$, Where, TC = Total cost per farm, Y = Total Returns per farm and X = Flock Size (Number of birds).

Break-Even Analysis

The break - even farm size has been computed by using the formula.

$$Break - Even\ Farm\ Size = \frac{Total\ Fixed\ Cost}{(\Pr ice\ Per\ Bird - Variable\ Cost\ Per\ Bird)}$$

The break - even volume of egg has been calculated by taking the formula, $V_E = \dfrac{F_C}{P - V_C}$,

Where, V_E - Break - Even Volume in number of Eggs, F_C - Fixed Capital Investment per Farm and P

- Price of Egg. $V_E = \dfrac{TVC - Y_{GR}}{N}$, Where, TVC - Total Variable Cost per Farm, Y_{GR} - Gross Returns

obtained per farm from by – products and N – Number of Eggs produced per farm

Benefit-Cost Ratio

It is the most appropriate and popular method in appraising investment project for profitability. It involves computation, comparision and evaluation of benefits against the cost involved. In this regard, net returns and Benefit-Cost ratio have been calculated in the following way

$$Net \, Re \, turns = Gross \, Re \, turns - Total \, Operational \, Cost$$

$$Benefit - Cost \, Ratio = \frac{Gross \, Re \, turns \, from \, the \, Sale \, of \, Eggs, Culled \, Birds, Manures \, and \, Empty \, feed \, Gunny \, Bags}{Total \, Operational \, Cost}$$

Rate of Return

Rate of return in layer enterprise is determined by taking net returns (net profits) and capital employed. It is calculated by taking the formula.

$$Rate \, of \, Re \, turn(i) = \frac{Estimated \, Net \, Re \, turns \, Over \, Total \, Cost}{Total \, Fixed \, Capital \, Investment} \times 100$$

Analysis of Cost and Economic Returns of Egg Production of Poultry Farmers

The economic viability of poultry farms has been analysed in terms of minimum economic farm size, minimum economic price of egg and break -even farm size and volume of eggs. The analysis of minimum economic farm size, which is computed by equating returns function with the cost function (Table 1), reveals that the minimum economic farm size in one crop cycle is 908 birds.

TABLE 1: ANALYSIS OF MINIMUM ECONOMIC FARM SIZE

Returns Function	Cost Function	Minimum Economic Farm Size in a Crop Cycle	Minimum Economic Farm Size
Y= -5423.896 + 519.722 X	TC = 125485.3 +375.48 X	908 birds	5448 Birds

Source: Values Computed from Primary Sources of Information.

Given the practice of rearing poultry in simultaneous cycles with an interval of 13 weeks between one cycle and the other cycle, the farmers are expected to adopt 6 cycles with in a crop period of 18 months, the minimum economic farm size is estimated to be around 5450 chicks. In the present study, 92 percent of the farms are operating above this minimum economic farm size and hence they are deemed to be economically viable units.

The economic viability of layer farms analysed in terms of minimum economic price of egg, presented in Table 2 indicates that all the layer farms are economically viable as they

are realising a price of Rs. 1.00 per egg which is far above the minimum economic price of Rs.0.76 per egg. The breaks even analysis presented in Table 5.3 shows that at least 862 layers has to be reared in one crop cycle to cover fixed cost.

TABLE 2: ANALYSIS OF MINIMUM ECONOMIC PRICE OF EGG

Price Variable	Price of Egg in Rs.
Minimum Economic Price of Egg	$\dfrac{405.32 - 45.62}{472.25} = 0.76$
Actual Price of Egg	$\dfrac{472.25}{472.25} = $ Rs. 1.00

Source: Values Computed from Primary Sources of Information

In the present study all the farms except 6 farms are having a flock size of more than 862 layers in one crop cycle which clearly demonstrates the viability of the layer farms in the study area. This result has been further confirmed by the analysis of break- even volume of eggs presented in the same table. It reveals that the production of eggs in one crop cycle required to recover the total fixed investment employed in poultry farming is 4,04,791 eggs. Whereas the actual number of eggs produced in a crop cycle on an average works out 18,28,769 eggs which is more than four and a half times that of the break-even volume of eggs, which amply speaks about the economic viability of layer farms. The economic viability of layer farms may vary from one group to the other group depending upon their socio-economic differences. Keeping in this in view, the analysis of economic viability has been carried out by different socio economic catagorisation of layer farms.

TABLE 3: BREAK EVEN ANALYSIS OF LAYER FARM SIZE

Particulars of Break even	Calculation of Break-even point	Break-even Values
Break-even Farm Size	$\dfrac{125485.24}{(517.9-372.35)}$	862 Layers
Break-even Volume of Eggs	$\dfrac{125485.24}{(1-0.69)}$	404791 eggs

Source: Values Computed from Primary Sources of Information

The analysis of capital investment made by 100 sample layer production enterprises operating within the Namakkal Revenue Block (presented in Table 4) indicates that a layer poultry farm on an average have invested Rs. 906511.4 towards farm capital, of which, 72.44 percent is incurred towards the construction of poultry shed with an average floor space of 16500 square feet. This clearly indicates that poultry enterprises in Namakkal Block have provided a good housing for layer rearing. The capital cost worked out per birds comes to Rs.244.30 out of which Rs. 176.97 is incurred towards poultry shed constituting about 97 percent, of the total cost incurred per bird on capital investment. The cost of poultry equipment

per bird is only Rs. 67.32. The space per layer has been found to be 1.76 square feet. The capital investment per square feet works out to Rs. 54.94. These values comes closer to the estimate adopted by Shanmugam and Kumar[9].

TABLE 4: Capital Investment in Layer Production Enterprise (Amount in Rupees)

Items of Capital Investment	Per Farm		Per Bird		Per Square Feet	
	Amount	Percent-age	Amount	Percent-age	Amount	Percent-age
Poultry Shed	656706.58	72.44	176.96	72.44	39.80	72.43
Poultry Equipments (Including Chick Cage & Electric Installations)	249804.79	27.56	67.32	27.56	15.15	27.57
Total Capital Investment	906511.4	100.00	244.28	100.00	54.94	100.00

Source: Values Computed from Primary Sources of Information

The capital investment of layer farm has varied across the age group of poultry organisers, (Table 5). While the young aged organisers have incurred Rs. 679143.40 towards capital investment, the middle aged and old aged layer organisers have incurred Rs. 1005682 and Rs. 849268 respectively for this purpose.

TABLE 5: Capital Investment in Layer Production Enterprise by the Age Group of the Poultry Farmers (Amount in Rupees)

Items of Capital Investment	Young Aged (less than 40 Years)			Middle Aged (40 to 50 Years)			Old Aged (Above 50 Years)		
	Per Farm	Per Bird	Percent-age	Per Farm	per Bird	Percent-age	Per Farm	Per Bird	Percent-age
Poultry Shed	468177.50	148.80	68.91	745250.33	202.30	74.51	597876.66	146.42	69.56
Poultry Equipments (Including Chick Cage & Electric Installations)	210965.88	67.14	31.09	260431.12	69.20	25.49	251391.49	64.07	30.44
Total Capital Investment	679143.38	215.94	100.00	1005681.5	271.5	100.00	849268.15	210.49	100.00

Source: Values Computed from Primary Sources of Information

This clearly indicates that farms with middle age organisers make greater investment than old and young aged organisers. However, considering capital investment per bird, the middle aged organisers have put in more investment than young aged and old aged organisers. This would have been due to large scale layer farming undertaken by these categories of farmers.

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[9] T.R Shanmugam and D.Suresh Kurnar, Op.Cit.

Not only the extent of investment varied across the age group of the poultry organisers, but also the proportion of capital investment made on poultry shed and equipment has varied significantly across the age group of the poultry organisers. Though investment on poultry shed constitute major proportion in the capital investments of all the age group of layer organisers, its proportion has slightly diminished in the case of farms with young aged organisers.

TABLE 6: Capital Investment in Layer Production Enterprise by the Level of Asset Holdings of Poultry Farmers (Amount in Rupees)

Items of Capital Investment	Level Of Asset Holdings								
	Low (less than 50 Lakhs)			Medium (Rs. 50 L to 100 L)			High (Above 100 Lakhs)		
	Per Farm	Per Bird	Percent-age	Per Farm	Per Bird	Percent-age	Per Farm	Per Bird	Percent-age
Poultry Shed	158037.50	150.00	68.29	552460.93	198.40	74.58	1110305.60	152.80	69.96
Poultry Equipments (including Chick Cage & Electric Installations)	71708.63	69.65	31.71	196383.29	67.63	25.42	440948.13	65.60	30.04
Total Capital Investment	229746.13	219.65	100.00	748844.21	266.03	100.00	1551253.73	218.4	100.00

Source: Values Computed from Primary Sources of Information

The total amount of capital investment made on layer production enterprise increases with the increase in the asset holdings of the farmers (Table 6). While the total capital investment per farm is lowest in the case of low level of asset holdings organisers, it is found to be highest in the case of farmers with high level of asset holdings organisers. While the farmers with low level of asset holdings have made only Rs. 2, 29, 746 investment on the errection of poultry shed and purchase of equipments, the farmers with high levels of assets have incurred Rs.1551254, investment for this purpose. Contrary to this, investment per bird is found to be higher in case of farmers with medium and low level of asset holdings as compared to the farmers with high level of asset holdings.

TABLE 7: Capital Investment in Layer Production Enterprise by the Size of Poultry Farm of Poultry Farmers (Amount in Rupees)

Items of Capital Investment	Size of the Poultry Farm								
	Small (Less than 12000 Birds)			Medium (12000 to 24000 Birds)			Big (Above 24000 Birds)		
	Per Farm	Per Bird	Percent-age	Per Farm	Per Bird	Percent age	Per Farm	Per Bird	Percent age
Poultry Shed	363043.75	234.70	76.67	462868.16	147.90	68.22	1215475.60	152.20	71.38
Poultry Equipments (Including Chick Cage & Electric Installations)	92502.43	71.40	23.33	214303.32	68.90	31.78	462562.53	61.03	28.62
Total Capital Investment	455546.18	306.1	100.00	677171.47	216.8	100.00	1678038.13	213.23	100.00

Source: Values Computed from Primary Sources of Information

The capital investment made on layer farms increases with the size of the farm. It is found to be Rs.1678038 in the case of large sized farms as against the investment of Rs.677171.50 and Rs.455546.18 made respectively by medium and small sized farms (Table 6.7). However, the per capita investment is found to be lower in the case of large sized farms as compared to that of medium and small sized farms. The composition of investment has varied slightly across the different size group of the farms. As compared to others, the medium sized farms showed relatively greater importance to poultry equipments, while small sized farms attached relatively greater importance to poultry shed. The data indicate the economics of scale in capital investment.

Conclusion

The study concluded that, there is good scope for increasing the income of the farmers by enabling them to make investment in layer farming as it results in greater returns per unit cost of investment. As the variable cost, particularly the feed cost accounts for a major share in the cost of egg production and returns from egg sale constitute major source of returns reaped in layer farming, it is possible to maximize the unit cost of return through increasing egg production and optimizing the use of feed and labour cost. The egg production can be increased by the optimal use of layer mash together with greater health measures and greater level of electric lighting.

References:

1. National Action Plan for Egg and Poultry – 2022 for Doubling Farmers Income by 2022, Department of Animal Husbendary, Dairying & Fisheries , Ministry of Agriculture & Farmers Welfare, Government of India.

2. Report of the Working Group on AH & dairying, 12th Five Year Plan. www.google.com.

3. Sakunthaladevi S., *et al*., (2019) Economic Analysis of Layer Farming in Namakkal District. International Journal of Agriculture Sciences, ISSN: 0975-3710 & EISSN: 0975-9107, Volume 11, Issue 11, pp.- 8558-8562.

4. Vikash Pawariya and Jheeba SS, "Economic Analysis of Cost- Return, Income and Employment in Poultry Enterprise in Jaipur District of Rajasthan State", International Journal of Agricultural Science and Research, Volume. 5, Issue 1, Feb 2015, pp no.73-79.

5. Malarvizhi V and Geetha K.T, "Economic Cost and Profit Assessment of Poultry farming in Namakkal District", Journal of Management and Science, Volume .5. Issue. 2, June 2015, pp. 42-55.

6. Viney Sharma, "Break-Even Analysis of Egg Production in Punjab", **Poultry Guide,** Vol.31, April, 1994, PP.43-45.

7. Surat Singh, "Resource Productivity, Returns to Scale and Economic Efficiency in Poultry Farming in Haryana", **Agricultural Situation in India,** Vol.52, No.7, October,

1995, PP.479-484.

8. T.R Shanmugam and D.Suresh Kumar, "Price Analysis of Poultry Products in Tamil Nadu", **Madras Agricultural Journal**, Vol. 80, No.8, August, 1993, PP. 434-442.

9. Muniappan .L, **Economic Efficiency of Layer Farming-A Study in Gobichettipalayam Taluk of Erode District**, December 2002.

10. Muralidharan M.R, and M.Thiagarajan,"Poultry: Few Research Findings for Better Poultry Management", **Kisan World**, February 1991.

11. Raja.A, **An Economic Study of Poultry Farming in Tamil Nadu**: A Case Study of Salem District, Unpublished Ph.D. Thesis, Madurai Kamaraj University, Madurai, July, 1987.

12. Singh, Surat, "Resource Productivity, Returns to Scale and Economic Efficiency in Poultry Farming in Haryana", **Agricultural Situation in India**, Vol.52, No.7, October 1995.

13. Poultry Development Schemes, app_vet_2.pdf, www.google.com.

14. Sakunthaladevi S., *et al*., (2019) Economic Analysis of Layer Farming in Namakkal District. International Journal of Agriculture Sciences, ISSN: 0975-3710 & EISSN: 0975-9107, Volume 11, Issue 11, pp.- 8558-8562.

15. Jadhav M.S., and D.V. Kasar, "Economics of Poultry Farming - A Case Study in Maharashtra", **Poultry Guide**, Vo1.26, No.9, September 1989.