



Economic performance of layer poultry industries in Ahmednagar district of Maharashtra

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ABSTRACT : Indian Poultry Industry is one of the fastest growing segments of the Agricultural sector in India .As the production of agricultural crops has been rising at a rate of 1.5 to 2 per cent per annum while the production of eggs and broilers has been rising at a rate of 8 to 10 per cent per annum. Today India is world' third largest eggs producer and fourth largest producer of broiler chicken. Poultry egg and meat are important sources of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of egg type chicken are now available with an ability of quick growth and high feed conversion efficiency. Depending on the farm-size, layer (for eggs) farming can be main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure has high fertilizer value and can be used for increasing yield of all crops. There are many facets of production and hence, many areas that are potential concern for the welfare of the animals involved. The poultry sector in India has undergone a paradigm shift in structure and operation which has been its transformation from a mere backyard activity into a major commercial agro based industry over a period of four decades. The constant efforts in up gradation, modification and application of new technologies paved the way for the multi fold and multifaceted growth in poultry and allied sectors.

KEY WORDS : Economic performance, Layer, Poultry industries

HOW TO CITE THIS PAPER : Kohakade, Dinesh A., Thorat, Omkar R. and Godase, Neha A. (2018). Economic performance of layer poultry industries in Ahmednagar district of Maharashtra. *Res. J. Animal Hus. & Dairy Sci.*, 9(2) : 36-41 : DOI: 10.15740/HAS/RJAHDS/9.2/36-41. Copyright@ 2018: Hind Agri-Horticultural Society.

INTRODUCTION

Poultry egg and meat are important sources of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of egg type chicken are now available with an ability of quick growth and high feed conversion efficiency. Depending on the farm-size, layer (for eggs) farming can be main source of family income or can provide subsidiary income and

gainful employment to farmers throughout the year. Poultry manure has high fertilizer value and can be used for increasing yield of all crops. There are many facets of production and hence, many areas that are potential concern for the welfare of the animals involved. The poultry sector in India has undergone a paradigm shift in structure and operation which has been its transformation from a mere backyard activity into a major commercial agro based industry over a period of four decades. The constant efforts in up gradation, modification and application of new technologies paved the way for the multifold and multifaceted growth in poultry and allied sectors (Asha, 2013 and Rai and Bawa, 2007).

Objectives of study:

– To study capital investment of the poultry industry

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– To calculate the economic performance and feasibility parameters of the Layer Poultry Industry.

MATERIAL AND METHODS

Primary data was collected by taking actual survey in or region and for poultry industries data were collected from various poultry industry in the Rahuri area (Ahmednagar district) of Maharashtra.

Analysis of data:

This is done with the help of various type of mathematical and statistical tools like graph, table, charts and various formulas. The data phased on fixed cost, variable cost, Net present worth, break-even point, benefit cost ratio and pay- back period to work out the performance efficiency and feasibility of poultry industries.

RESULTS AND DISCUSSION

The results of the present study as well as relevant discussions have been presented under following sub heads:

Capital investment of poultry farm:

Fixed cost :

A fixed cost is an expense or cost that does not change with an increase or decrease in the number of goods or services produced or sold. Fixed costs are expenses that have to be paid by a company, independent of any business activity.

Initial investment:

Table 1 : Land rent

Particular	Area (R)	Total cost (Rs.)
Land rent	10	1,25,000

Land rent = @ 10% of market value
= 1, 25,000 x 10 /100
= Rs.12, 500/-

Table 2 : Building and construction

Particular	Total cost (Rs.)
Shed and building	19,50,000
Cages, drinkers, feeder	8,00,000
Bore well	45,000
Total	Rs.27,95,000

Depreciation- Depreciation cost = Original cost - Junk value/useful life

Table 3 : Depreciation on building and construction

Sr. No.	Particulars	Original cost (Rs.)	Useful life	Rate of depreciation (%)	Junk value	Depreciation (Rs.)
1.	Building and construction	19,50,000	50	2	39,000	38,220
2.	Cages, drinkers, feeder	8,00,000	50	2	16,000	15,680
3.	Bore well	45,000	25	4	1,800	1,728
	Total	27,95,000				55,628

Depreciation on building and construction = 55,628

Table 4: Depreciation on equipments and machinery

Sr. No.	Particulars	Cost (Rs.)	Useful life	Rate of depreciation%	Junk value	Depreciation (Rs.)
1.	Feed machine	3,25,000	40	2.5	8,125	7,921.87
2.	Electrical installation					
	Generator	87,000	20	5	4,350	4,132.5
	Inverter	33,500	10	10	3,350	3,015
3.	Water supply structure					
	Tank	15,000	10	10	1,500	1,350
	Motor	5,500	10	10	550	495
	Pipeline	6,000	20	5	300	285
4.	Plastic trays	34,200	10	10	3,420	3,078
5.	CCTV	30,000	20	5	1,500	1,425
6.	Foggers	5,000	10	10	500	450
7.	Weighing balance	17,000	10	10	1,700	1,530
8.	Curtain	8,000	5	20	1,600	1,280
9.	Lighting material	10,500	5	20	2,100	1,680
10.	Spray pump	2100	5	20	420	336
11.	Spade	500	5	20	100	80
12.	Drum, bucket	900	5	20	180	144
13.	Cleaning set	1000	5	20	200	160
	Total	5,81,200				27,362.37

Table 5: Total depreciation

Sr. No.	Particular	Original cost (Rs.)	Depreciation value (Rs.)
1.	Building and construction	27,95,000	55,628
2.	Equipment and machinery	5,81,200	27,362.37
	Total	33,76,200	82,990.37

i.e. Depreciation cost :- Rs.82,990.37/-
 Initial investment = Building and construction+ Equipment and machinery
 = 27,95,000+ 5,81,200
 = Rs.33,76,200/-

Total fixed cost:

Interest rate on fixed cost (14%) =
 = 33,76,200 x 14/100
 = Rs.472668/-

Total fixed cost = Land rent + Depreciation + Interest
 on fixed cost

= 12,500+82,990.37+4,72,668
 = Rs.5,68,158.37/-

i.e. Total fixed cost = Rs.5,68,158.37/-

Total production:

Total number of birds = 10,500
 Mortality (5%) = 525
 Therefore,
 = 10,500- 525
 = 9,975 birds

Table 6: Production of eggs/bird/batch = 331 eggs

Particulars	Quantity	Eggs given/ bird/batch	Production/ batch
Bird	9,975	331	33,01,725
Per unit fixed cost = 5,68,158.37/ 33,01,725 = Rs.0.17/egg			

Variable cost:

Variable cost means the costs which are become recur during the year such as costs for inputs, purchasing of Raw material, Payments of labours, loss during process, electricity charges, Sample checking charges, license renew charges, etc.

Table 7: Feed cost

Particular	Kg/day	Price/ per kg (Rs.)	Cost per day (Rs.)	Per month (Rs.)	Per batch (Rs.)
Maize	672	14	9,408	2,82,240	36,69,120
Soya	177.6	34.5	6127.2	1,83,816	23,89,608
DORB	192	11	2112	63,360	8,23,680
Shell grit	98.4	5.5	541.2	16,236	2,11,068
Concentrate	60	45	2700	81,000	10,53,000
Total	1200		20,888.4	6,26,652	81,46,476

Table 8: Labour wages

Quantity	Wages/person/month	Per batch (Rs.)
3	7,000	2,73,000

Table 9: Bird cost

Particulars	Quantity	Rate/bird (Rs.)	Total (Rs.)
Birds	10,500	187	19,63,500

Table 10 : Other expenses

Sr. No.	Particular	Total cost (Rs.)/ batch
1.	Power and fuel	49,400
2.	Miscellaneous expenses	13,000
3.	Repairing and maintenance	19,500
4.	Medicines	65,000
	Total	1,46,900

Total variable cost :	=Rs.3.51/egg
– Variable cost = Feed cost + Labour wages + Bird cost + Other expenses	Total cost of production= Total fixed cost + Total variable cost
= 81,46,476 + 2,73,000 + 19,63,500 + 1,46,900	= 5,68,158.37 + 1,15,82,863.6
= Rs.1,05,29,876/ Batch	= 1,21,51,021.98 (Rs.)
Interest on variable cost (10%) = 1052988760 x 10/100	– Total cost of production for 1 bird :
=Rs.10,52,987.6/-	$\frac{\text{Total cost of production}}{\text{Number of birds}}$
– Total variable cost = Variable cost + Interest on variable cost	= 1,21,51,021.98 / 10,500
= 1,05,29,876 + 10,52,987.6	= Rs.1157.24/bird
= Rs.1,15,82,863.6/-	– Total cost of production for 1 egg :
Per unit variable cost = 1,15,82,863.6 / 33,01,725	$\frac{\text{Per unit fixed cost}}{\text{Per unit variable cost}}$

Table 11: Total turnover per batch (Gross income)

Particulars	Quantity	Egg given	Production	Rate (Rs.)	Income (Rs.)
Bird	9,975	331	33,01,725	4/Egg	1,32,06,900
Gunny bags	7250	-	-	10/Bag	72,500
Manure	100 (Trolleys)	-	-	7000/Trolleys	7,00,000
Cull	9,975	-	-	80/Bird	7,98,000
				Total	1,47,77,400

Gross income: Rs. 1,47,77,400/-

Table 12: Net profit

Particular	Amount (Rs.)
Total gross income	1,47,77,400
Total cost of production	1,21,51,021.98
Total net profit	26,26,378.02

i.e. total net profit: Rs. 26,26,378.02

Table 13: Net present worth

Years	Cost (Rs.)	Benefit (Rs.)	Net income (Rs.)	D.F. (14)	NPW
1	1,55,27,221.98	147,77,400	-7,49,821.97	0.87	-6,57,738.57
2	1,27,30,165.16	1,55,16,270	27,86,104.84	0.76	21,43,817.20
3	1,33,38,265	1,62,92,084	29,53,818	0.67	19,93,743.01
4	1,39,76,771	1,71,06,688	31,29,917	0.592	18,53,162.02
5	1,46,47,201	1,79,62,022	33,14,821	0.51	17,21,613.94
			Total		70,54,597.61

Net present worth: 70,54,597.61

Interpretation: NPW is positive hence, project is feasible

Table 14: Benefit cost ratio

Years	Cost (Rs.)	Benefit (Rs.)	D.F. (14)	PWC	PWB
1	1,55,27,221.98	1,47,77,400	0.87	1,36,20,370	1,29,62,632
2	1,27,30,165.16	1,55,16,270	0.76	97,95,449	1,19,39,266
3	1,33,38,265	1,62,92,084	0.67	90,02,949	1,09,96,692
4	1,39,76,771	1,71,06,688	0.59	82,75,370	1,01,28,532
5	1,46,47,201	1,79,62,022	0.51	76,07,297	93,28,911
				48301436	55356034

Benefit cost ratio = Present worth of benefit/ Present worth of cost
= 55356034/48301436
= 1.15

Interpretation = B:C ratio is more than 1 hence project is feasible.

Table 15: Internal rate of return

Years	Cost (Rs.)	Benefit (Rs.)	Net income	D.F. (14)	NPW	D.F. (18)	NPW
1	1,55,27,221.98	1,47,77,400	-749821.97	0.87	-6,57,738.57	0.847	-6,35,442.35
2	1,27,30,165.16	1,55,1,6270	2786104.84	0.76	21,43,817.20	0.718	20,00,937.11
3	1,33,38,265	1,62,92,084	29,53,81	0.67	19,93,743.01	0.609	17,97,784.83
4	1,39,76,771	1,71,06,688	31,29,917	0.59	18,53,162.02	0.516	16,14,376.27
5	1,46,47,201	1,79,62,022	33,14,821	0.51	17,21,613.94	0.437	14,48,938.62
					70,54,597.61		62,26,594.50

$$IRR = \frac{\text{Lower discount rate} + \text{Difference between two discount rates} \times \text{NPW at lower discount rate}}{\text{Difference between NPW at two discount rates}}$$

$$= 14 + [4 \times 70,54,597.61 / 8,28,003.10]$$

$$= 14 + [34.08]$$

$$= 48.08\%$$

Internal rate : 48.08%

Interpretation: IRR is greater than market interest rate so project is feasible

$$= 0.17 + 3.51$$

$$= \text{Rs.} 3.68/\text{egg}$$

Break even analysis:

$$\text{BEP In unit} = \text{Fixed cost} / (\text{P}-\text{V})$$

where, P = Price per unit, V = Variable cost per unit

Variable cost per egg = Rs.3.50

Selling price per egg = Rs.4

$$\text{BEP} = 5,68,158.37 / (4 - 3.50)$$

$$= 5,68,158.37 / 0.50$$

$$= 11,55,086.61$$

Break even point in unit = 11,55,086.61 eggs

$$\text{BEP in (Rs.)} = \frac{\text{Total fixed cost}}{1 - \text{Variable cost per unit} / \text{Selling price}}$$

$$= \frac{5,68,158.37}{1 - (3.50/4)}$$

$$= \text{Rs.} 46,20,346.46$$

Break even point (Rs.) = Rs. 46,20,346.46

Interpretation- 1155086.61 eggs or Rs. 4620346.467 is the point where layer poultry project is neither in loss nor in profit.

Margin of safety:

Margin of safety (Unit) = Total production – production at BEP

$$= 33,01,725 - 11,55,086.61$$

Margin of safety = 21,46,638.38 eggs

Rs. Margin of safety (Rs.) = Gross income – BEP in

$$= 1,47,77,400 - 46,20,346.46$$

Margin of safety (Rs.) = Rs. 1,01,57,053.53

Interpretation – In order to place the selected layer

poultry unit is in profit, the unit must produce more than 2146638.38 eggs.

Payback period:

Payback period = Initial investment / Annual net cash revenue

$$= 33,76,200 / 22,86,967.65$$

$$= 1.48$$

$$\text{So, } = 1 + 1.48 = 2.48$$

i.e. payback period:

Year = 2

Month = 0.48 x 12 = 5.76

Days = 0.7 x 30 = 21

Interpretation- After 2 year 5 month and 21 days project will cover the initial investment.

Profitability index:

Profitability index = NPW/Initial investment

$$= 70,54,597.61 / 33,76,200$$

Profitability index = 2.09

Interpretation- Profitability index is greater than 1 hence, the layer poultry is financially feasible.

Break even point:

Formula : $\text{BEP} = F / (\text{P}-\text{v})$

where,

F= Fixed cost

P= Selling price / kg

V= Variable cost /kg

Here,

$$\text{BEP (Unit)} = 5,68,158.37 / (4 - 3.50)$$

= 11, 55,086.61 eggs

Interpretation-The break even point of layer poultry is 11, 55,086.61 eggs.

BEP (Rs) = Total fixed cost / (1-Variable cost per kg/selling price per kg)

= 5, 68,158.37/(1- 3.50 / 4)

= 46, 20,346.46

Interpretation-11,55,086.61 eggs or Rs. 46,20,346.46 is the point where layer poultry project is neither in loss nor in profit.

Margin of safety:

Margin of safety (Unit) = Total production – Production at BEP

= 33, 01,725 - 11, 55,086.61

Margin of safety = 21, 46,638.38 eggs

Margin of safety (Rs.) = Gross income – BEP in Rs.

= 1, 47, 77,400 – 46, 20,346.46

Margin of safety (Rs.) = Rs. 1,01,57,053.53

Interpretation – In order to place the selected layer poultry unit in profit, the unit must produce more than 21,46,638.38 eggs. Similar work related to the present investigation was also carried out by Bhatia and Barwal (2015); Leeson and Summers (2008) and Panda and Mohapatra (1989) also have written in their books.

Conclusion:

- NPW is positive hence, the project is feasible
- BC ratio is greater than 1, hence, project is

financially feasible.

– Internal rate of return is greater than the market interest rate (16%), hence, project is financially feasible and acceptable.

– In order to place the selected Layer Poultry Unit in profit, the unit must produce more than 21, 46,638 eggs.

– After 2 years, 5 months, 21 days project will cover the initial investment.

– Profitability index is greater than 1 hence, the Layer Poultry Unit is financially feasible.

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Received : 14.11.2018; **Revised:** 12.11.2018; **Accepted :** 26.11.2018