

Original Research Article

Agribusiness Analysis of Broiler Poultry Units in Raigad District of Maharashtra

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ABSTRACT

Per farm total cost of production was found highest on large poultry farm (Rs. 5232209) followed by the medium (Rs. 2636044) and small (Rs. 1395372) poultry farms. The cost of production per kg of live weight has inverse relation with the size of broiler farms. Per farm gross returns obtained from small, medium and large groups were Rs. 1590276, Rs. 3180338 and Rs. 6579208 respectively. However at the overall level it was Rs. 3327833. Out of which 98.08 per cent from sale of broiler, 1.67 per cent from sale of manure and 0.25 per cent from sale of empty gunny bags. The per farm and per bird cost benefit ratios at overall level was 1:1.22, whereas different size groups it was 1:1.14, 1:1.21 and 1:1.26 from small, medium and large groups respectively. The financial feasibility analysis indicated positive net present value, benefit cost ratio has greater than one and internal rate of returns more than prevailing rate of interest in all size of broiler farms. This showed that the broiler poultry farming is profitable business in Raigad district.

Keywords

Agribusiness,
Broiler,
Poultry units,
Raigad

Introduction

Poultry production is playing an important role in agro-base industries. Success of poultry business depends on the high production and low mortality. The mortality is one of the measure hindrances in the development of entrepreneurship in poultry business. The poultry sector is one of the rare examples of the social economic development, which has attained its present status without much help from international agencies or investment from the government plans compared to agriculture sector. The poultry sector therefore deserves more attention from all private and government agencies involved in planning poultry development.

The Konkan region falls under the heavy rainfall zone, divided into four districts viz, Thane, Raigad, Ratnagiri and Sindhudurg, which were cultivating mainly rice crop in *kharif* season. Moreover about 68 per cent of land holdings in the region are below two hectares which resulted into low per capita income. Due to these facts dairy and poultry enterprises are emerging as a subsidiary enterprise in Konkan region. The Raigad district having maximum poultry farms with maximum production in Konkan region. Though, there is substantial very little recent information is available on cost, returns, also profitability and its economic feasibility of broiler units. Therefore, a study on the financial feasibility of investment in broiler poultry production in Raigad district, was undertaken.

Materials and Methods

A list of broiler poultry units from Raigad district was obtained from concerning authority. Three Tahsils namely, Alibag, Pen and Roha having maximum broiler poultry units were selected purposively. From each Tahsil twenty broiler poultry units were selected randomly. The total sample consists of 60 broiler poultry units which were analyzed to obtain appropriate result. To study the effect of size of broiler poultry units on production and profitability of broiler production, the selected sample broiler poultry growers were classified into different size groups as per number of broiler poultry birds per batch. The financial feasibility of investment in broiler poultry units was judged with the help of following financial feasibility tests.

1. Net present value(NPV)
2. Payback period(PBP)
3. Benefit cost ratio(BCR)
4. Internal rate of return(IRR)

i) Net Present Value (NPV)

It is the discounted value of net cash flow of the broiler poultry unit during its life time. It is computed as,

$$NPV = \sum_{t=1}^n \frac{(B_t - C_t)}{(1+r)^t} - I$$

Where,

B_t = Benefits in period 't'

C_t = Cost in period 't'

r = Discount rate

t = Project life

I = Initial investment.

For viability of investment NPV should be positive at prevailing rate of interest.

ii) Pay Back Period (PBP)

The payback period of the project was estimated by using the following formula.

$$P = \frac{I}{E}$$

Where,

P = Payback period in years,

I = Investment in rupees,

E = Annual net cash revenue in rupees.

iii) Benefit Cost Ratio (BCR)

The benefit cost ratio is the ratio between present worth of benefits and that of cost

$$BCR = \frac{\sum_{t=0}^n B_t(1+r)^{-t}}{\sum_{t=0}^n C_t(1+r)^{-t}}$$

If BCR is greater than one, the investment is considered feasible.

IV) Internal Rate of Return (IRR)

The internal rate of return is that rate of discount at which NPV is zero. It is calculated by using following formula.

$$IRR = NPV = \sum_{t=1}^n \frac{(B_t - C_t)}{(1+r)^t} - I = 0$$

If IRR is greater than prevailing rate of interest then investment is feasible.

Results and Discussion

Composition of sample

The selected broiler poultry owners were classified into three different categories. The stratification was carried out with the help of mean and standard deviation *i.e.*, Arithmetic

mean (A.M.) minus half standard deviation (S.D.) for I category, A.M. minus half S.D. to A.M. plus half S.D. for II category and A.M. plus half S.D. and above for III category. The composition of selected broiler poultry owners is given in Table 1.

The composition of broiler poultry owners indicated that, out of 60 broiler poultry owners in Raigad district, 27 (45.00%) belonged to small group, 21 (35.00%) belonged to medium group and 12 (20.00%) belonged to large group on the basis of number of birds reared per batch.

Per farm fixed capital investment in broiler poultry units

Per farm fixed capital investment on broiler poultry farm included investment on buildings, equipment and machinery and other miscellaneous items are given in Table 2.

Per farm fixed capital investment on broiler farm in small, medium and large groups, was Rs. 164455, Rs. 322271 and Rs.647298 respectively. Whereas at overall level it was Rs. 335963, out of which Rs. 292616 was invested on buildings, Rs. 40249 was invested on equipment and Rs. 3098 on other miscellaneous items like buckets, weighing balance and water infrastructure etc.

The fixed capital investment per batch increased as size of broiler farm increased; it was Rs.24008, Rs. 56838 and Rs. 117691 in small, medium and large broiler poultry units respectively. However at the overall level it was Rs. 54539. Also the per bird investment on fixed capital assets decreased as the size of broiler farms increased, it was Rs. 14.48, Rs. 14.34 and Rs. 13.98 in small, medium and large broiler poultry units respectively. However at the overall level it was Rs. 14.25.

It is observed from Table 2 that, the per farm fixed capital investment on building and equipment's increased as size of broiler farm increased. The broiler house was the main item of cost in building contributing 59.73 per cent in total fixed capital investment.

Per farm physical inputs used in broiler poultry production

Per farm physical inputs used in broiler production which includes labour, feed material, litter material, electricity and water charges and medicine and other charges are given in Table 3.

Per farm male and female labour used in broiler production at the overall level was 362.57 and 423.61 man days respectively. Whereas the quantity of feed and litter material used in production was 86266 kg and 11940 kg respectively. Also the electricity and water charges were Rs.19249 and medicine and other charges were Rs. 31348 respectively. Thus it is seen from the table that, per farm physical inputs used in broiler production increased as size of broiler farm increased.

Per farm cost of broiler poultry production

The per farm per year total number of birds raised on the broiler poultry farm were 11359, 22480 and 46332 in small, medium and large groups respectively. However, at overall level it was 23570 birds per farm. Per farm cost of broiler production is presented in Table 4.

It is seen from the Table 4 that, the total cost of production was found highest on large (Rs.5232209) followed by the medium (Rs. 2636044) and small (Rs. 1395372) groups. At the overall level average total cost was Rs. 2746554. Similarly the total fixed cost were

highest on large (Rs. 102047) followed by medium (Rs. 50488) and small (Rs.25680) poultry farms. The share of variable cost in total cost was maximum in all the poultry farms; it was 98.16 per cent in small, 98.08 per cent in medium and 98.05 per cent in large groups respectively.

Among the variable cost, feed cost and price of the day old chicks were contributing major share in all type of farms. At the overall level per farm total cost of broiler production was Rs.2746554. The contribution of variable cost in total cost of production is 98.11 per cent (Rs. 2694622) and fixed cost was 1.89 per cent (Rs. 51933). Among the total cost of production feed cost is major cost contributing more than three fifth of cost (62.81%) followed by price of one day old chicks (17.63%), interest on working capital (10.51%), labour charges (3.98%) and remaining other costs (5.07%) per poultry farm.

It is seen from the Table 4 that, the per farm variable cost, fixed cost as well as total cost incurred on broiler production were increased as the size of broiler poultry farm increased.

Cost and returns from broiler poultry units

The per farm and per bird cost and returns as well as benefit cost ratio were calculated and are presented in Table 5.

Table 5 showed that, the per farm total cost of production of broiler poultry birds form different farm size groups was Rs. 1395372, Rs. 2636044 and Rs.5232209 for small, medium and large groups respectively. However at the overall level it was Rs.2746554. Gross returns obtained from different size groups were Rs. 1590276, Rs. 3180338 and Rs. 6579208 from small, medium and large groups respectively. However at overall level was Rs.3327833. The per farm net returns obtained from different size groups was Rs. 167562, Rs. 482314 and Rs. 1212727 from small, medium and large groups respectively. However at the overall level it was Rs. 517460. The per bird net returns obtained from different size groups was Rs. 15, Rs. 21 andRs.23 from small, medium and large groups respectively. However at the overall level it was Rs.22.

Table.1 Composition of sample broiler poultry owners

Sr. No.	Size of broiler poultry unit	Range (No. of birds)	Number of units
1	Small	Upto 2565	27 (45.00)
2	Medium	2566 to 5295	21 (35.00)
3	Large	5296 and above	12 (20.00)
	Total		60 (100.00)

(Figures in parentheses are percentages to total)

Table.2 Per farm fixed capital investment in broiler poultry units

(Figures in Rs.)

Sr. No.	Particulars	Size groups			Overall
		Small	Medium	Large	
1	Buildings				
a	Brooder house	22370 (13.60)	49143 (15.25)	121667 (18.80)	54350 (16.18)
b	Broiler house	97722 (59.42)	198881 (61.71)	373500 (57.70)	200683 (59.73)
c	Office cum storage room	10846 (6.60)	13810 (4.29)	31667 (4.90)	18250 (5.43)
d	Servant residence	10500 (6.38)	14191 (4.40)	37088 (5.73)	19333 (5.75)
	Sub total	141439 (86.00)	276025 (85.65)	563922 (87.12)	292616 (87.10)
2	Equipment's				
a	Feeders	10678 (6.49)	22471 (6.97)	42317 (6.54)	21141 (6.30)
b	Waterer	9943 (6.05)	19646 (6.10)	36921 (5.70)	18735 (5.58)
c	Litter stirring/Phavada	255 (0.16)	358 (0.11)	626 (0.10)	373 (0.11)
	Sub total	20876 (12.70)	42475 (13.18)	79855 (12.34)	40249 (11.99)
3	Other Miscellaneous	2139 (1.30)	3771 (1.17)	3512 (0.54)	3098 (0.92)
	Total	164455 (100.00)	322271 (100.00)	647298 (100.00)	335963 (100.00)
4	Fixed capital Investment				
	a) per batch	24008	56838	117691	54539
	b) per bird	14.48	14.34	13.98	14.25

(Figures in parentheses are percentages to total)

Table.3 Per farm physical inputs used in broiler poultry production

Sr. No.	Particulars	Size groups			
		Small	Medium	Large	Overall
A)	Variable cost				
1	Wages of labour				
	Male	49662 (3.56)	53663 (2.04)	66275 (1.27)	54386 (1.98)
	Female	52605 (3.77)	54230 (2.06)	62085 (1.91)	55069 (2.00)
2	Price of one day old chicks	232900 (16.69)	462780 (17.56)	956083 (18.28)	484381 (17.63)
3	Feed	845025 (60.56)	1654996 (62.78)	3326622 (63.61)	1725320 (62.81)
4	Cost of Litter material	5584 (0.39)	11545 (0.43)	25896 (0.51)	11940 (0.44)
5	Electricity and water charges	8480 (0.61)	18792 (0.72)	40139 (0.77)	19249 (0.71)
6	Medical/vaccines expenses	17038 (1.22)	29392 (1.12)	55598 (1.07)	31348 (1.14)
7	Miscellaneous items charges	11645 (0.84)	23134 (0.88)	47804 (0.91)	24219 (0.88)
	Total Working capital	1222939 (87.64)	2308532 (87.58)	4580502 (87.54)	2405912 (87.60)
	Interest on working capital (12% to total working capital)	146753 (10.52)	277024 (10.50)	549660 (10.51)	288710 (10.51)
	Total variable cost (A)	1369692 (98.16)	2585556 (98.08)	5130162 (98.05)	2694622 (98.11)
B)	Fixed cost				
1	Depreciation on building and implements	9235 (0.66)	18261 (0.69)	37318 (0.71)	18337 (0.67)
2	Interest on fixed capital (10 % to fixed investment)	16445 (1.48)	32227 (1.22)	64729 (1.24)	33596 (1.22)
	Total fixed cost (B)	25680 (1.84)	50488 (1.92)	102047 (1.95)	51933 (1.89)
	Total cost (A+B)	1395372 (100.00)	2636044 (100.00)	5232209 (100.00)	2746554 (100.00)

Table.4 Per farm cost of broiler poultry production

(Figures in Rs.)

Sr. No.	Particulars	Size groups			Overall
		Small	Medium	Large	
1	Labour (days)				
	a) Male	331.08	357.75	441.83	362.57
	b) Female	404.65	417.15	477.58	423.61
2	Feed (kg)	42251.25	82749.81	166331.09	86266.02
3	Litter material (kg)	5584.26	11544.94	25895.86	11940.11
4	Electricity and Water charges(Rs.)	8480	18792	40139	19249
5	Medicine and other charges (Rs.)	17038	29392	55598	31348

Table.5 Cost and returns from broiler poultry units

(Figures in Rs.)

Sr. No.	Particulars	Size of broiler poultry units			
		Small	Medium	Large	Overall
I)	Per farm				
A	variable cost (A)	1369692	2585556	5130162	2694622
B	fixed cost (B)	25680	50488	102047	51933
	Total cost (A+B)	1395372	2636044	5232209	2746554
C	Returns from				
	Sale of bird	1562934	3118358	6444936	3264014
	Sale of manure	23867	54067	117500	55569
	Sale of gunny bags	3475	7913	16772	8250
	Gross returns	1590276	3180338	6579208	3327833
	Net returns	167562	482314	1212727	517460
	Benefit cost ratio	1.14	1.21	1.26	1.22
II)	Per bird				
A	Variable cost (A)	121	115	111	114
B	Fixed cost (B)	2.26	2.23	2.16	2.21
	Total cost (A+B)	123	117	113	116
C	Returns from				
	Sale of bird	138	139	139	138
	Sale of manure	2.10	2.39	2.54	2.36
	Sale of gunny bags	0.31	0.35	0.36	0.35
	Gross returns	140	141	142	141
	Net returns	15	21	23	22
	Benefit cost ratio	1.14	1.21	1.26	1.22

Table.6 Economic evaluation of investment in broiler poultry farming

Sr. No.	Parameters	Small	Medium	Large	Overall
1	PBP (years)	4	3	3	3
2	NPV (Rs.)	882993	1909402	4145684	2009379
3	BCR	1.11	1.12	1.14	1.12
4	IRR (%)	53.88	117.91	104.68	97.75

PBP- Pay Back period, NPV- Net Present Value, BCR- Benefit Cost Ratio, IRR- Internal Rate of Return.

Table 5 showed that, the per bird total cost of production from different size groups was Rs. 123, Rs. 117 and Rs.113 for small, medium and large groups respectively. However at the overall level it was Rs. 116. Gross returns obtained from different size groups were Rs. 140, Rs. 141 and Rs. 142 from small, medium and large groups respectively. However at the overall level it was Rs. 141. The per farm and per bird cost benefit ratios from different size groups was 1.14, 1.21 and 1.26 for small, medium and large groups respectively. However at the overall level it was 1.22. Shaikh (2005) and Ganesh and Rai (2006) observed the similar result for cost returns and profitability in poultry farming in Gujarat state and Andaman Nicobar Island.

It can be concluded from the Table 5 that, net returns and benefit cost ratios per farm as well as per bird increased with increased in farm size of poultry units. This indicated that, as the size of poultry unit increased the net margin over the rupee invested on broiler poultry birds also increased.

Economic analysis of investment in broiler poultry farming

Broiler farming is medium term business, average life span of the project is about ten years therefore, it is necessary to evaluate such a huge investment for its worthiness and for this purpose, broiler farming enterprise

needs to be analysed with great deal caution and foresight. Taking into account the initial cost of rearing for per farm per year and maintenance cost up to 10 years, a series of cash outflow (costs) was prepared. Similarly, a series of cash inflow (returns) was prepared, taking into account per farm returns received. The outflow and inflow series i.e. cost and return series for small, medium, large groups and overall level is given separately in appendix-I. With the help of these series of cash flows and by using the feasibility parameters namely (i) Payback period (PBP) (ii) Net present value (NPV) (iii) Benefit cost ratio (BCR) and (iv) Internal rate of returns (IRR) as per the procedure outlined in the methodology chapter were worked out to see the financial viability of investment in broiler poultry farming. The estimated values of these parameters for broiler farmers are presented in Table 6.

Financial feasibility of broiler poultry farming

The data on payback period, net present value, benefit cost ratio and internal rate of returns of investment in broiler farms of different sizes is presented in Table 6.

Discount rate taken for economic evaluation was 12 per cent in all groups. Payback period was found to be the highest in small broiler farmers (4 years), followed by

medium, large and overall level (3 years). Thus small broiler farms taken longer time to cover up their initial investment as compared to medium and large broiler farms.

Net present value was highest among large (Rs.4145684) broiler farms, followed by medium (Rs. 1909402) and small (Rs. 882993) broiler farms, showing increasing trend with the increased in farm size. However, at the overall level it was (Rs. 2009379) the investment on all farm sizes turned out to be an economically feasible as the net present value was positive in all the farms.

Benefit cost ratio was 1.11 for small, 1.12 for medium and 1.14 for large broiler poultry farm. At the overall level it was 1.12. Thus, benefit cost ratios increased with increased in farm size and the large farms were economically more feasible.

Internal rate of returns was highest on medium farm 117.91 per cent, followed by large farm 104.91 per cent and small farm 53.88 per cent respectively. At the overall level it was 97.75 per cent. IRR was greater than the prevailing rate of interest in all size groups. Mahadik (1997) and Shikh (2005) found similar results for financial feasibility in poultry farming in Raigad district of Maharashtra state and Anand district of Gujrath state.

In conclusion, Per farm total cost of production was found highest on large poultry farm (Rs.5232209) followed by the medium (Rs.2636044) and small (Rs.1395372) poultry farms. The cost of production per kg of live weight has inverse relation with the size of broiler farms. Per farm gross returns obtained from small, medium and large groups were Rs.1590276, Rs.3180338 and Rs.6579208 respectively.

However at the overall level it was Rs.3327833. Out of which 98.08 per cent from sale of broiler, 1.67 per cent from sale of manure and 0.25 per cent from sale of empty gunny bags. The per farm and per bird cost benefit ratios at overall level was 1:1.22, whereas different size groups it was 1:1.14, 1:1.21 and 1:1.26 from small, medium and large groups respectively. The financial feasibility analysis indicated positive net present value, benefit cost ratio has greater than one and internal rate of returns more than prevailing rate of interest in all size of broiler farms. This showed that the broiler poultry farming is profitable business in Raigad district.

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