

Research Article



Economic Analysis of Broiler Poultry Farms: A Case Study of District Lower Dir

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Abstract | To make economic analysis of broiler poultry farms, a survey research was carried out in district Lower Dir in 2015. Four *tehsils* were selected namely *Adinzai, Balambat, Timergara and Sumerbagh* on the basis of purposive sampling technique. From these *tehsils*, 92 farms were selected randomly from 460 poultry farms. The sample farms were categorized into three groups i.e. small, medium and large. For analysing the data, descriptive statistics and gross margin were used. The average total cost of small poultry farm was Rs. 3,10,067 per flock while that of medium and large farms were Rs. 4,99,002 and Rs. 7,34,290 respectively. The highest cost was estimated for feed followed by chicks cost. The average gross margin of small farms was Rs. 38,556 while that of medium and large farm were Rs. 62,844 and Rs. 89,261 respectively. The highest net benefits were reported from the large scale poultry farms in spite of high mortality in large farms. Proper vaccination and medication was proposed to decrease losses due to high mortality particularly in large farms.

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Introduction

Agriculture is the foundation of Pakistan's economy. Nearly 20.9 percent of GDP and 45 percent of total employment is generated by agriculture sector. It highly contributes to Pakistan's export. This sector is mainly divided into two sub sector *i.e.* crop and livestock. Both of them have historic importance in providing basic livelihood to mankind. Even, now both segments have a considerable share in the livelihood through generating employment opportunities and providing food security to mankind. In this regard the role of livestock is revolutionary, as far as the developing and agrarian economies are concerned. About 30 to 35 million people from rural population of Pakistan are engaged in this very sub sector (GoP, 2015).

Poultry business is beneficial and profitable with glorious prospects of increasing the accessibility to high quality protein for the consumption of humans in a short period of time. For food, it's the easiest and cheapest source of protein. (Udoh and Etim, 2007; Alam, 2000). Besides its nutritional value, poultry has turned out to be an important source of livelihood and employment. It has employed millions of people worldwide directly in poultry farming and its allied business of feed production, hotel/restaurant industry, retail, wholesale business, carriage and transport etc. Poultry industry has significantly developed in the world and now is an important source of foreign exchange earning of many countries. It is expected that poultry meat will increase seven fold in the first two decades of 21st century (FAO, 2003). The present

study aims to calculate the cost and revenue of broiler poultry farms by using descriptive statistics and gross margin technique. This study will provide a more solid and concrete base of the economic aspects to the small scale poultry farms in the study area. Some relevant studies mentioned in the succeeding lines to provide a conceptual and methodological framework to the present study.

Ali et al. (2014) studied cost efficiency of open shed broiler farmers in Pakistan. Maximum likelihood estimation revealed that cost efficiency ranges from 0.425 to 0.972 with mean efficiency of 0.741 implies that on average farmer was 74 percent efficient in cost saving. Fawwaz et al., (2013) studied resource use efficiency in broiler farming in Jordan. Ratios of marginal value product (MVP) to marginal factor cost (MPC) were less than unity for labor cost, cost of feed and cost of equipment which indicated that these inputs were over utilized. Results of the study showed greater than unity value for day old chick, cost of veterinary services, drugs and vaccines, and also indicated that these inputs were underutilized during the production process in the study area. Imtiaz (2012) conducted a study to analyse poultry farming enterprises in District Peshawar of Pakistan. The study revealed that the commission agent supply 79 percent of one day old chicks while the remaining 21 percent is obtained from wholesale market. On credit, 74 percent of procurement of one day old chicks was made, out of which 63 percent was from the commission agent and the remaining 11 percent was from the wholesale market. Bano et al. (2011) showed the descriptive analysis of socioeconomic characteristics of the sample poultry farmers along with cost and return analysis in Rawalpindi. Results showed that capital turnover of 1.32 with a rate of return on fixed cost 424 percent and on variable cost 135 percent. Sheikh and Zala (2011) conducted a study on the production performance and economics appraisal of broiler farms in Anand District of Gujarat (India). Different economic measures such as benefit cost ratio, net present value, break even analysis and gross margin were used and found that as the farm-size increases, the net return as well as per kg live weight basis also increases. In the Punjab state of India, Singh et al. (2010) carried the cost and return analysis of different sizes of broiler farms. Total variable cost per bird was Rs.77.37%, Rs. 68.18% and Rs. 62.51% on small, medium and large farms respectively. Variable cost per bird, feed cost per bird, interest on working capital and labor cost etc were highest

on small farms followed by medium and large farms. Taru et al. (2010) conducted a study to examine the economics of broiler production in Cameron. The results of the analysis show that the broiler producers were not efficient in the production activities. Islam (1998) revealed that reiterated spending on day old chicks were Rs.158500, Rs.87642 and Rs.28512 for small, medium and large size poultry farms respectively. The spending on feed, vaccines and medicines, mortality, labour and marketing were also mentioned in the research for different size of poultry farms in Khyber Pakhtunkhwa. Kaliszewicz and Grofik (1989) found that broiler weight at slaughtering was related to production cost per broiler. The study suggested that higher weight mean higher feeding cost per kg output.

Table 1: Tehsils wise distribution of sample size

Tehsil	No. of Poultry Farms	Sample Size
Adenzai	140	28
Timergara	120	24
Balambat	110	22
Samar bagh	90	18
Total	460	92

Source: Livestock Directorate Timergara, 2014

Tufail et al. (2012) examined the economics of backyard poultry production. The study showed that high producing strains be introduced for improving the production performance of household poultry. This study will help the poultry farms owner as well the stakeholder involved directly or indirectly to this sub-sector of agriculture in pursuing their business with more insight of the variations in profit, revenue and cost prospects with size of the business in the study area. Taru et al. (2010) reveals that broiler producers were confronted with many problems during production process i.e. low market prices of broilers, high prices of feed, lack of veterinary services, transportation and lack of access to credit and extension services. Abedullah et al. (2007) studied issues and economics of poultry production and estimated the share of different stake holder in total profitability from poultry industry. It was found that the major obstacle in the expansion of poultry industry was the inequitable distribution of profit. Adebayo and Adela (2005) investigated the factors affecting poultry farmers in Nigeria. The study revealed that a national support to strengthen the poultry production is required in the area of finance and input. Study con

Table 2: Cost/flock of different variables of varied size of poultry farms (in PKRs.)

S.No	Categories of Cost	Small farms		Medium farms		Large farms	
		Cost in Rs.	%	Cost in Rs.	%	Cost in Rs.	%
1	Chick cost	68484	22.09	129086	25.87	209667	28.55
2	Feed cost	197272	63.62	290126	58.14	428889	58.40
3	Vaccination	4925	1.59	7505	1.50	10889	1.48
4	Electricity	757	0.24	1119	0.22	1267	0.17
5	Litter	4350	1.40	6724	1.35	8067	1.09
6	Heating	6500	2.10	16000	3.20	26000	3.54
7	Medicines	16016	5.16	24270	4.86	44444	6.05
8	Transportation	2174	0.70	3378	0.68	4189	0.57
9	Labour	10870	3.50	12627	2.53	15222	2.07
10	Equipments	1236	0.39	2167	0.43	1656	0.22
Total		310067	100	499002	100	734290	100

Source: Field Survey, 2015

ducted in Peshawar by [Mussawar and Durrani \(2002\)](#) mentioned that by keeping proper size of the operation, effective use of resources, good housing, sustaining highly productive stock, keeping standard hygienic practices, proper planning and minimizing production cost can increase and make commercial egg production more profitable.

Materials and Method

The present research study was based on primary data. However secondary data was also documented from Livestock Directorate Timergara, Dir Lower. Primary data was collected through a comprehensive questionnaire. To collect required data, visits of several poultry farms were made in the research area. The data was obtained through face to face interview from the broiler poultry farmers. Poultry farms are categorized in three different size of farm. The farm which consist birds/chicks upto 2000 are categorized in small size poultry farms. The farms which consist birds/chicks ranged from 2001 to 4000 are categorized in medium size poultry farms while the 4001 and above are categorized in large size farms.

Descriptive statistics that include percentages, mean values (averages) etc. and budgetary technique are very popular methods for calculating the cost of different inputs and return from poultry business. These techniques were used to determine the cost and revenue of broiler poultry farming in the study area.

Out of the total seven *tehsils*, four were selected name-

ly Samarbagh, Balambat, Timergara and Adenzai. The total firms in these *tehsils* were 460 (Livestock Directorate Timergara, 2014). By selecting 20% of the total population, sample size of 92 were obtained. Further the proportionate technique was used to catch the sample from different *tehsils* by the following formula.

$$n_i = \frac{N_i}{N} \times n$$

Where:

n_i : No. of total sample drawn from each *tehsil*; N_i : Total number of poultry farms in each *tehsil*; N : Total poultry farms in the study area and n is the overall sample size. The number of sample size that selected from each *tehsil* of district Lower Dir is given below in the [Table 1](#).

$$\text{Total Revenue (TR)} = \text{Total Farm Output} \times \text{Price} + \text{Value of Broiler Manure}$$

$$\text{Total Cost (TC)} = \text{Total Fixed Cost (TFC)} + \text{Total Variable Cost (TVC)}$$

Where:

TVC= Total Variable Cost = cost of feed+ cost of day old chicks+cost of medicine+ cost of electricity+ heating charges+cost of other factors

$$\text{Gross Margin (GM)} = \text{GR} - \text{TVC}$$

Where:

GR: Gross Revenue; TVC: Total Variable Cost.

Results and Discussion

Cost is the most significant factor that influences the profitability of poultry farm. It shows efficiency of different inputs used in poultry farming. The primary cost (the cost incur on elements like personal costs, energy cost, material costs *etc.*) was considered to make the calculation simple and easy. The results of the partial budgeting technique indicate that the average total cost of small poultry farm is 310067 rupees per flock while that of medium and large farms are 499002 and 734290 rupees respectively. The average per flock component cost was calculated for three farm categories. The main cost items includes average per flock cost of checks, feed, vaccination, electricity, litter, heating, medicines, transport, labour and equipment for small, medium and large size poultry farms. The highest cost was estimated for feed that was 63.62% for small farms, 58.14% for medium farms and 58.40% for large farms followed by checks cost that were 22.09%, 25.87% and 28.55% for small, medium and large farms respectively (Table 2).

Table 3: Revenue per flock (in PKRs.)

Particular	Revenue from chick	Revenue from litter	Total Gross revenue
Small	335717	6976	342692
Medium	527805	8757	536562
Large	800072	10556	810628

Source: Field Survey, 2015

The cost of each item presented in the cost Table 2 is the average cost incurred on the item by individual farm. The main cost items of poultry farms in the area are Chick cost, Feed cost, Vaccination, Electricity, Litter, Heating, Medicines, Transportation, Labour and Equipment's cost. The equipment used by poultry farm last for long time so it's cost is further divided on the number of flocks that have used these equipment till depreciation.

The revenue of poultry farm is subdivided into two categories. The significant portion of revenue comes from selling birds and small portion comes from litter. The average gross revenue per flock of small size poultry farms is 342692 rupees in which 335717 rupees comes from chicks and 6976 rupees comes from litter. The average gross revenue per flock of medium size poultry farms is 536562 rupees in which 527805 rupees comes from chicks and 8757 rupees comes from litter. The average gross revenue per flock of large size

poultry farms is 810628 rupees in which 800072 rupees comes from chicks and 10556 rupees comes from litter (Table 3).

The revenue of the poultry (Table 3) is consisted of the output plus manure price. The monetary value of output is equal to the quantity of bird's meet in kg multiplied by price. The price multiplied with the revenue is the prevailing price of the market at the time of the survey conducted. The fluctuation of price was removed by using the average price. In poultry business is mainly run by the owners, to calculate the economic revenue, the opportunity cost (best alternative foregone cost) was taken for the personal work of the owner in his own poultry farm.

Table 4: Gross margin of poultry farms (in PKRs.)

Size of farms	Total Gross Revenue	Total variable cost	Gross Margin
Small Farms	342692.30	304134.78	38557.55
Medium Farms	536562.01	473718.24	62843.77
Large Farms	810627.78	721366.67	89261.12

Source: Field Survey, 2015

Gross margin is the difference between the gross return and the total variable cost incurred. It provides simple and quick method for analysing farm business. The mean value of gross margin for small poultry farm is 38557.55 rupees while for medium and large farms that are 62843.77 and 89261.12 rupees respectively. It is concluded that gross margin for large poultry farms is the highest followed by medium and small farms. (Table 4). Similarly research also shows that Performance of large units was better than that of medium and low capacity broiler farms (Chhikara, 1989).

Table 5: Mortality of birds (died chicks per thousand)

Farm Size	Minimum	Maximum	Mean	S.D
Small Farms	20	156	63.80	36.33
Medium Farms	34	100	59.56	14.36
Large Farms	60	100	83.00	14.53

Source: Field Survey, 2015

Mortality of birds is the number of died chicks per thousand. Mortality is the main factors which cause fluctuations in the revenue of the poultry farm. The average mortality rate of small size poultry farms was 63.80 with standard deviation 36.33. The average mortality rate of medium size poultry farms was

59.56 with standard deviation 14.36 while that of large size poultry farms was 83.00 with standard deviation 14.53 (Table 5). The findings of the study are in conformity with the study conducted by Mussawar and Durrani (2002) that large farms have high mortality.

Conclusion

Based on the findings of the research study, it is concluded that the average total cost of small poultry farm was 310067 rupees per flock while that of medium and large farms were 499002 and 734290 rupees respectively. The highest cost was estimated for feed in all the farms that was 63.62% for small farms, 58.14% for medium farms and 58.40% for large farms followed by checks cost that were 22.09%, 25.87% and 28.55% for small, medium and large farms respectively. On the revenue side, the average gross revenue per flock of small size poultry farms was 342692 while that of medium and large size poultry farms were 536562 and 810628 rupees respectively. The results of gross margin showed that large poultry farms have the highest gross margin value followed by medium and small farms. In spite of the high mortality rate in large size poultry farms, large firms were yielding more revenue with high gross margin value than small and medium size poultry farms. The owners of the farms are advised to invest in the large size poultry farms as its cost effective and fetch better returns.

Author's Contribution

Muhammad Afzal conceived and designed the study, and collected data. Murad Khan performed experimental work and wrote the article. This article is the part of M.Phil thesis of Muhammad Afzal.

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