

Economic Analysis of Poultry Egg Production in Quetta District Balochistan Pakistan

Ms.Irfana Noor Memon^{*1}, Sanauallah Noonari¹, Muhammad Asif², Maria Pathan²
Rizwan Jamali², Zarmina Memon², Danyal khan², Sajid Ali Sial²

1. Department of Agricultural Economics, Faculty of Agricultural Social Sciences, Sindh Agriculture University,
Tandojam Pakistan

2. Department of Agricultural Economics, Faculty of Agricultural Social Sciences,
Sindh Agriculture University, Tandojam Pakistan

Abstract

The poultry sector is one of the most organized and vibrant segments of the agriculture industry of Pakistan. This sector generates direct and indirect employment and income for about 1.5 million people. Its contribution in agriculture and livestock is 6.4 percent and 11.5 percent, respectively. Pakistan has been producing 10,000 million table eggs and 1,196 metric tons of chicken meat annually. Thus the egg poultry (layers) farmers in district Quetta, Baluchistan are incurred total expenditures of Rs. 526950.00 per farm, respectively. However, the selected egg poultry farmers paid equipments of expenditures of Rs.73450.00 per farm, expenditures rearing Rs.151500.00. The labour cost paid by the selected egg poultry farmers was Rs. 100000.00 per farm. As far as marketing expenses are concerned the selected egg poultry farmers incurred Rs. 162000.00 per farm. Thus the selected tomato growers in district Quetta, Baluchistan incurred a total average cost of production of Rs. 526950.00 per farm. It was also observed that the selected egg poultry farmers in the Quetta, Baluchistan area earned a total physical productivity of per 1000 bird farm (18 dozen eggs / bird for 900 birds, 900 spent hens weighing 1.5 kg each) and earned a gross income of Rs. 1430200.00 per farm . It was further estimated that the selected egg poultry farmers after incurring all expenditure and sale of produce earned net income of Rs. 71133.00 per farm at a benefit cost ratio of 1:0.81. High profit was observed in poultry egg farming in Quetta.

Keywords: Egg, poultry, physical productivity, cost benefit ratio, Pakistan.

1. Introduction

The agriculture sector continues to be an essential component of Pakistan's economy. It currently contributes 21 percent to GDP. Agriculture generates productive employment opportunities for 45 percent of the country's labour force and 60 percent of the rural population depends upon this sector for its livelihood. It has a vital role in ensuring food security, generating overall economic growth, reducing poverty and the transforming towards industrialization. The present government is determined to improve the quality of life of the people and to banish hunger and malnutrition from the country by making agriculture an efficient, productive and profitable sector of the economy. The poultry sector is one of the most organized and vibrant segments of the agriculture industry of Pakistan. This sector generates direct and indirect employment and income for about 1.5 million people. Its contribution in agriculture and livestock is 6.4 percent and 11.5 percent, respectively. Pakistan has been producing 10,000 million table eggs and 1,196 metric tons of chicken meat annually. "The per capita consumption of meat is only 6.6 kg and 55 to 60 eggs annually. Meanwhile, as per the standard requirement, 25 to 28 kg of meat and 250 to 300 eggs are required to be consumed by each person. The price of poultry products have more than doubled in the past few years boosting the industry's prospects. According to market watchers, the average price of chicken meat has gone from Rs125 per kg to Rs250-270 per kg and eggs from Rs36-48 per dozen to Rs96 to Rs130 per dozen in the last couple of years (GOP, 2013).

Commercial and desi are the types of eggs consumed in the country but consumption of commercial egg is high due to cheaper in price and easily availability than desi eggs. Awareness in consumption is increasing day by day through print and electronic media but still there is a deficiency. The culture, traditions, customs are influenced on egg consumption in rural and urban societies. On the consideration and importance of eggs and its consumption, the study was planned to know the consumption and cooking patterns. Very limited information is available on the consumption and cooking patterns of chicken eggs in urban and rural families of Quetta District Baluchistan (Khan, 2005).

A large egg yolk contains approximately 60 calories the egg white contains about 15 calories .A large yolk contains more than two-thirds of the recommended daily intake of 300 mg of cholesterol (although one study indicates the human body may not absorb much cholesterol from eggs). The yolk makes up about 33% of the liquid weight of the egg. It contains all of the fat, slightly less than half of the protein, and most of the other nutrients. It also contains all of the chlorine, and one yolk contains approximately half of the recommended daily intake. For instance, chicken eggs that are especially high in omega 3 fatty acids are produced by feeding laying hens a diet containing polyunsaturated fats and kelp meal. Pasture-raised free-range hens which forage largely for their own food also tend to produce eggs with higher nutritional quality in having less cholesterol and fats

while being several times higher in vitamins and omega 3 fatty acids than standard factory eggs. Focusing on the protein and crude fat content, a 2010 USDA study determined there were no significant differences of these two macronutrients in consumer chicken eggs (FAO, 2007).

2. Objectives

1. To study of socio-economic characteristics of the poultry egg farms in the study area.
2. To scale of operations of poultry egg production and marketing in the Quetta district of Balochistan.
3. Determine cost, returns and profitability of poultry egg production in the study area.
4. To make the suggestions for the improvement of the productivity poultry egg production in the Quetta district of Balochistan.

3. Methodology

The study was carried out to investigate the production of poultry eggs farming in Quetta district of Baluchistan province. The study focused on the production of poultry eggs.

3.1. Study Area

The study was based on primary data. The data was collected through field survey using face to face interview with farmers simple 60 producers of poultry was selected farmers were selected from Quetta district so that sample could represent all categories of farmers.

3.2. Multiple regression models

Production function model was used to determine the physical relationship between inputs and output obtained (Tijani et al., 2010), in poultry egg production to achieve specific objective ii. The implicit form of the model is expressed as follows:

$$Y = f(X_1 X_2 X_3 X_4 X_5 X_6, \varepsilon)$$

Where: Y = Output of poultry egg production (crate)

X₁ = Family labour (man-day/hour)

X₂ = Hired labour (man-day/ hour)

X₃ = Flock size (number)

X₄ = Feed (kg)

X₅ = Depreciation cost of equipment (N)

X₆ = other operating expenses (N)

ε = Error term.

In the analysis, different functional forms were used which include linear, semi-log, double-log and exponential functions, and the double log function was selected and used as the lead equation. The choice of the best functional form (lead equation) selected was based on both statistical and econometric criteria (T-test, F-statistics, and R₂), number of significant variables and the a priori expectation of the signs of the coefficients. The X₁, X₄, and X₅ coefficients of a priori, was expected to be positive, while those of X₂, X₃ and X₆ negative.

4. Results

The study area was Quetta District of Balochistan .The study is described into two subsections:

1. Socio-economic characteristics
2. Physical productivities and net returns on poultry eggs farming

4.1. Age

Table 1: Distributions of the respondents according to their age

Age	No. of farmers	Percentage
21-30 years	12	20.00
31-40 years	18	30.00
41-50 years	19	31.66
More than 50 years	11	18.33
Total	60	100

Table-1 shows the association of the age of the respondents with the percent of poultry eggs farmer age group. In age group of 21-30 years, 20.00%, 31-40 years, 30.00%, 41-50 years, 31.66% of poultry eggs farmer age group. With more than 50 years old farmers, the percentage of poultry eggs farmer age group 18.33%.

4.2. Education

Table 2: Distribution of the respondent according to their education level

Education level	No. of farmers	Percentage
Illiterate	8	13.33
Primary	15	50.00
Middle	26	43.00
Matriculation	10	16.66
Collage/University	01	1.66
Total	60	100.00

Table-2 shows the association of the age of the respondents with the percent of poultry eggs farmer education level. In education level 13.33% farmers were illiterate, while about 50.00% farmers were Primary level of education, 43.00% were middle, 16.66% matriculation and 1.66% bachelor/master education in the study area.

4.3. Farming

Table 3: Distributions of the respondents according to their farming experience

Farming Experience	No. of farmers	Percentage
Up to 10 years	25	41.66
11-20 years	08	13.33
21- 30 years	15	25.00
Above 30 years	12	20.00
Total	60	100.00

Table-3 shows relationship between farming experience of poultry eggs farmer. The respondents having farming experience of up to 10 years; they had 41.66% , 11-20 years of farming experience had 13.33%, 21-30 years of farming experience possessed 25.00% of poultry eggs farming. Similarly, farmers with more than 30 years of farming experience had 20.00% of poultry eggs farming.

4.4. Family size

Table 4: Distributions of the respondents according to their family size

Family size	No. of farmers	Percentage
5-10 Members	23	38.33
11-15 Members	28	46.66
More than 15 Members	09	15.00
Total	60	100.00

Table-4 shows about the family size of the respondent. Their family size of 5-10 members and they had 38.33% of the poultry eggs farmer 11-15 Members and they had 46.66% of the poultry eggs farmer and more than 15 Members they had 15.00% of the poultry eggs farmer.

4.5. Family Type

Table 5: Distribution of respondents according to family type in the study area

Family Type	No. of farmers	Percentage
Joint	32	46.66
Extended	6	10.00
Single	22	43.33
Total	60	100.00

Table-5 shows that there were 46.66% were joint family system, 10.00% were extended family type and 43.33% were single family type of the poultry eggs farmer.

4.6. Hygienic

Table 6: Distributions of respondents according to Hygienic

Particulars	No. of farmers	Percentage
Good	09	15.00
Satisfactory	31	51.66
Poor	20	35.00
Total	60	100.00

Table-6 shows about the respondents were categorized in four different categories on the basis of hygienic conditions on their farms. That 15.00% farmer is rearing birds in good hygienic condition, 51.66% in

satisfactory, 35.00% in poor hygienic condition.

4.7. Disinfectants

Table 7: Distributions of respondents according to Disinfectant methods

Particulars	No. of farmers	Percentage
Spray chemicals	27	45.00
Fumigation	18	30.00
Not practiced	15	25.00
Total	60	100.00

Table-7 shows that more than 45.00% farmers spray chemicals for disinfection purpose. It also presents that 30.00% farmers used to fumigate for disinfection purpose. It was also reported that 25.00% farmers do not exercise any such practice to disinfect their farm.

4.8. Farm Size/Capacity

Table 8: Size /capacity of egg farm in the study area

Farm Capacity	No. of farmers	Percentage
Avg 1000 layers birds	60	100.00
Total	60	100.00

Table-8 shows that there were 100.00 % farmers who have farm capacity average 1000 layers birds on their farms.

4.9. Farm rent

Table 9: Farm rent of egg farm in the study area

Particulars	Rate per unit	Mean
Farm rent for (1000) birds	40000.00	40000.00
Total Rs.		40000.00

Table-9 shows that on an average per Farm rent for (1000) birds farmer spent a sum of Rs. 40000.00 in study area.

4.10. Equipment Expenditure

Table 10: Equipment Expenditure of egg farm in the study area

Particulars	Rate per unit	Mean
2 electric/gas/Diesel brooders	500.00	1000.00
10 chick guard sheets	200 .00	2000.00
20 chick feeders / trays	80.00	1600.00
20 chick drinkers	85.00	1700.00
40 round feeders	150.00	6000.00
10 automatic drinkers	450.00	4500.00
1 buckets	350.00	350.00
1 wheel barrow	2300.00	2300.00
1 electric water pump	5000.00	5000.00
1 spray pump	7500.00	7500.00
16 lying nest	2000.00	32000.00
60 egg trays (plastic)	35.00	2100.00
18 curtains	400.00	7200.00
Miscellaneous expenditure		2000 .00
Total Rs.		73450.00

4.11. Expenditures Rearing

Table 11: Expenditures rearing of egg farm in the study area

Particulars	Rate per unit	Mean
Cost of 1000 day-old chicks(1000)	Rs.70/each	70000.00
Cost of feed 6 kg / bird for (1000)	Rs.40/kg	40000.00
Cost of vaccination & medication	Rs.28/bird	28000 .00
Elect: & fuel consumption charges	Rs.2000/ month	12000.00
Miscellaneous expenditure		1500.00
Total Rs.		151500.00

4.12. Labour charges

Table 12: Labour Inputs of egg farm in the study area

Particulars	Rate per unit	Mean
Supervisor (1/2 monthly visit)	500.00	100000.00
Feedings/monthly	4000.00	20000.00
Cleaning/monthly	4000.00	20000.00
Watchmen	4000.00	20000.00
Drinkers/monthly	4000.00	20000.00
Spraying (weekly spray)	500.00	10000.00
Total Rs.		100000.00

Table-12 shows that Rs 100000.00 on an average per farm poultry farmer spent labour cost of production. This included Rs. 100000.00 on Supervision (weekly visit), Feedings Rs. 20000.00, Cleaning Rs. 20000.00, Watchmen Rs. 20000.00, Drinkers Rs. 20000.00 and spraying (weekly spray) Rs. 10000.00 respectively in the study area.

4.13. Marketing costs

Table 13: Marketing cost of egg farm in the study area

Particulars	Rate per unit	Mean
Loading	6000.00/monthly	36000.00
Transportation	15000.00/monthly	90000.00
Unloading	6000.00/monthly	36000.00
Total Rs.		162000.00

Table-13 it is clear from result that each selected poultry farmers in study area on average per farm spent a sum of Rs. 162000.00. This included Rs. 36000.00 for loading, Rs. 90000.00 for transportation and Rs. 36000.00 of unloading.

4.14. Total Expenditures

Table 14: Total Expenditures of egg farm in the study area

Particulars	Mean
Farm rent/cost	40000.00
Equipment Expenditure of farm	73450.00
Expenditures Rearing	151500.00
Labour charges	100000.00
Marketing costs	162000.00
Total Rs.	526950.00

Table-14 showed that the selected poultry farmers in study area on average per farm spent a total cost of production of Rs. 526950.00. This included Rs. 40000.00, Rs. 73450.00, Rs. 151500.00, Rs. 100000.00 and Rs. 162000.00 on Farm rent/cost, Equipment Expenditure of farm, Expenditures Rearing, Labour charges and marketing costs respectively on capital inputs.

4.15. Physical Productivity/ Revenue Productivity

Table 15: Physical / Revenue Productivity of egg farm in the study area

Particulars	Rate per unit	Mean
Sale of 18 dozen eggs / bird for 900 birds	80.00/dozen	1296000.00
Sale of 900 spent hens weighing 1.5 kg each	92.00/kg	124200.00
Sale of poultry manure	2500.00/trolley	10000.00
Total Rs.		1430200.00

Table-15 shows that the each selected poultry farmer in study area on an average per farm earned of Rs. 1430200.00 that included Rs. 1296000.00 on Sale of 18 dozen eggs / bird for 900 birds, Rs. 124200.00 on Sale of 900 spent hens weighing 1.5 kg each and Rs. 10000.00 sale of poultry manure obtained by the farmers of poultry.

4.16. Net farm income

Table 16: Net farm income of egg farm in the study area

Particulars	Mean
Gross income (Rs) A	1430200.00
Total expenditure (Rs) B	526950.00
Net Income (Rs) A-B=C	903250.00

Table-16 the result cleared from the table that each poultry egg farmer on an average per farm earned during study, Rs. 903250.00 on net income, Rs.1430200.00 on gross income and Rs. 526950.00 on total expenditure in the study area .

4.17. Productivity ratio

Table 17: Productivity ratio of egg farm in the study area

Particulars	Gross income (Rs)	Total expenditure (Rs)	Input-output ratio
Farm	(A)	(B)	A/B = C
1	1430200.00	526950.00	1:2.70

Table-17 show that the selected poultry egg farmers on an average per farm earned Rs. 1430200.00 on the inputs at Rs. 526950.00 in study area. Therefore they availed input output ratio of 1:2.70 from poultry farming in the study area; it means that with the investment of Rs.1.00 in poultry enterprises they yielded Rs. 2.70 in the study area.

4.18. Cost Benefit ratio

Table 18: Cost Benefit ratio of egg farm in the study area

Particulars	Net income (Rs)	Total expenditure (Rs)	Cost benefit ratio
Farm	(A)	(B)	A/B = C
1	903250.00	526950.00	1:1.71

Table -18 shows that the cost benefit ratio of the farming of poultry at 1:0.48 it means that the poultry egg farmers obtained Rs. 0.48 on each rupee invested by them in the study area.

5. Conclusion and suggestions

In this study, different capacity laying hen farms in District Quetta of Balochistan, which have a considerable importance in the laying hen farming in Balochistan province, were compared in terms of performance, including feed consumption, production cost and profitability per chick and egg, and the most profitable farm size was determined. Study results indicate that farms had the highest egg yield, a lower feed consumption and better feed efficiency ratios. In addition to these technical criteria, farms were found to be more advantageous in terms of economic criteria. When the analyzed farms are assessed in terms of profit margin, it was found that profit margin was positive. Profit margin was found to increase parallel to the farm. The poultry sector is dependent on external sources in the terms of brood. In addition, investments in manufacturing mentioned products in Balochistan should be encouraged.

Therefore, it is suggested that to adopt more and more new tech knowledge, through which farmers should be increase the production, gross margin and increase net returns. By increasing egg production farmers were improve the living intended. For the promotion of poultry egg following strategy should be adopted.

- Live bird and egg traders replied that short and inconsistent supply in market places is the most devastating constraints for the development of their business activity.
- Research and higher education institutions should give due attention to the preparation and promotion of chicken fast food recipes as part of the research development programs hand in hand with the genetic improvements of local breeds.
- Thus improving the development of infrastructures in the study areas in particular and the country as a whole would have solid implications in the development of egg production.
- Interested pilot producers should be selected and assisted to undertake semi-intensive production of local chicken under close supervision by the extension advisors.
- Advising proper combination of inputs to the farmer and giving subsidy on the inputs will result in enhanced per farm production.
- Government should provide subsidies on poultry feed, poultry medicine and other micro nutrients.
- There is need of proper guide to farmers about egg production so government should provide and activate researchers and extension department for proper guideline of farmers.

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