Economic Analysis of Poultry (Broiler) Production in Mirpur, Azad Jammu Kashmir

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Abstract

This paper is based on primary data collected from 60 poultry farms in Mirpur district, Azad Jammu & Kashmir (AJK). Farms were categorized as: small farms having a population of 2000 birds; medium farms having a population of 2001 to 4000 birds; and, large farms with population of 4001 to 6000 birds. Results indicate that this business is adopted as major source of income; however, most of the commercial poultry farms have been closed due to lesser profits and even heavy losses during last few years. Majority of poultry farms (83 %) are small farms and the farmers are forced to rely on non-institutional source of credit. Seasonal and cyclical price fluctuations in input and output are found higher. Poultry producers are major stakeholders having no role in price fixation. The estimated input-output ratio of poultry production is 1:1.12. The per rupee return does not look promising for investors of this sector especially in case of small farmers who are unable to reap the benefit of economy of scale.

Key words: Poultry production, economics, analyasid, AJK

Introduction

Animal protein foods for human population in Azad Jammu and Kashmir (AJK) have been a problem of great concern. The provision of balanced food containing all essential nutrients posses a great challenge for human health. It was reported that AJK is facing a shortage of protein intake and the availability of protein is about 40 grams per capita per day against the required amount of 70 grams per capita per day in AJK (GoAJK, 2002a). The share of protein from animal origin is about 21 % of the total protein intake against the required extent of 40%. According to this data, there is a deficiency of about

20 gm of animal proteins per capita per day, which imposes health problems of serious nature (GoAJK, 2002b).

Poultry production is considered to be one of the most economical and efficient systems of producing animal protein foods. This sector has played a pivotal role in bridging the gap between supply and requirement of animal protein. Poultry meat is a common food item among the majority of population. In AJK, 741 commercial broiler farms were reported and out of those 309 were located in Mirpur district. The total production of broiler in Mirpur district was 10,95000 tons during 2001-02 (Dept. of Poultry Development, 2002). However, the demand of meat has increased over time owing to cheap rate and high quality protein required to maintain good human health. Therefore, there is a dire need to facilitate and promote poultry production in the area to provide quality protein at low rates to the general masses.

In AJK, poultry industry has remained neglected and considered as an insignificant sub-sector of agriculture. Meat and egg productivity of indigenous birds is not promising, hence total returns are very low that would not attract high rate of investment. Poorly planned and improperly organized efforts for rearing indigenous birds were made that resulted in almost zero improvement in productivity. International Fund for Agricultural Development made some efforts with positive results to develop a poultry rearing system on scientific grounds in AJK (IFAD, 2001).

In spite of efforts being made to improve poultry production, the net returns in poultry production are not promising (Rahman, et al, 2003). The present study was conducted to overview the existing broiler production system in AJK with emphasis on the estimation of cost of production and returns to poultry producers. This study has also focused on the major problems faced by the poultry producers. Following were the main objectives of the study:
1) To overview the existing production system of poultry (broiler) and the problems faced by the

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producers in AJK; (2) To estimate the input-output ratio in poultry production; and (3) To suggest the

Materials and Methods
Universe
The study was based on primary data collected from the poultry producers of district Mirpur, AJ&K during 2003-04. The said district was selected for having large number of the poultry farms. Before launching the survey, the questionnaire was pre-tested and improved accordingly. Key informant technique was also employed to get the basic relevant information of the proposed study.

Sampling Procedure
One of the objectives of this study was to assess the existing production system of poultry in AJ&K. However, in an empirical investigation, it is impossible to collect information from the whole population. Therefore, the researchers are often forced to make inferences based on information derived from a representative sample of the population. The sample size and the degree of variation usually affect the quantity and quality of information obtained from the survey. Using appropriate sampling methods, both factors can be controlled (Scheaffer 1986). The aim is to devise a sampling scheme which is economical; easy to operate; and, provides unbiased estimates with small 'variance' (Barnett, 1991). The main characteristics of sampling theory applied in this study are discussed below.

Sampling Method
The time and cost constraints generally forced the researchers in social sciences to select an appropriate sample size from a population as a true representative of it. Barnett (1991) considerd that cost is the main constraint to carry out interviews of the whole population. Given limitations in terms of money; time; efforts; and, data management - sampling is more appropriate method. Further, sampling not only saves cost and time but can also give more accurate results than a census which are more acceptable (Kinnear and Taylor 1987; Casley and Kumar 1988). Following steps have been involved in the sampling procedure:

Defining the Population
Classification of the population is the first step in the sampling procedure, namely, the sector or element under investigation, the sampling unit, the area or extent of investigation, and the duration of investigation (Kinnear and Taylor, 1987). All the poultry farms of the district engaged in broiler production were classified as population of the study.

Sampling Frame
A sampling frame is a list of all sampling units available for selection at a given stage of the sampling process (Barnet, 1991). The frame must define and present every sampling unit and give it a weight in the population, registered voters, farm size or maps of rural areas, town plans or a list of towns, villages and administrative areas (Kinnear and Taylor, 1987). Accordingly, the sampling frame of poultry producers of the given district was prepared through an informal survey depending on their location and size with the help of Poultry Department of Mirpur. The sampling frame consists of 309 elements.

Sample size
Casely and Kumar (1988) suggested that a good survey sample should have both a small sampling error and minimum standard error. This can be obtained if one has unlimited resources. However, given constraints, such as finance, time and data management compromises have to be made in selecting the sample size (Poate and Daplyn, 1993). Thus on the basis of - nature of research and analysis; number of variables; resource constraints; and, the importance of decision, a sample size of 60 poultry farms engaged in broiler production was selected. Additionally, 10 collection agents, 10 retailers and 100 consumers were also interviewed for getting a realistic view about existing marketing system of poultry (broiler) and consumption behavior in AJ&K.

Analytical Technique
Production of farm commodities involves numerous relations between resources and commodities. Some of these relationships are simple while the others are complex but they all provide the tools by which problems of production can be analyzed (Heady 1988). The production function has been used to analyze the data collected from the poultry farmers.

Results and Discussion
The main objective of this chapter is to describe the demographic and socioeconomic characteristics of the studied poultry farmers including their – age; education; and, farming experience. Besides, farm characteristics such as involvement in poultry farming and access to institutional credit have also been described.

1. Age of the respondents
The data on age group of the sampled poultry farmers revealed that 35 percent respondents fall in the age group of 41-50 years, followed by 23 percent each in the age group of 20-30 and 31-40 years, while 19 percent respondents fall within the age group of 51 and above.

2. Education level
Information about education of selected poultry farmers was analyzed and found that 20 percent

respondents were illiterate and same percentage had primary and middle level education, each. Similarly, 33 percent respondents were found matriculate while the percentage of undergraduate and post graduate was 5 percent and 2 percent, respectively.

3. Poultry farming experience

The analysis of information regarding the poultry farming experience of selected farmers revealed that 80 percent of the respondent farmers are having poultry farming experience up to 10 years followed by 18 percent and 2 percent of respondents having experience of 11-20 years and above, respectively.

4. Scale of poultry business

In order to examine the resource management and its impact on productivity and sustainability, the Poultry producers were divided into three groups on the basis of number of birds: 1) Up to 2000 birds; 2) From 2001-4000 birds; and, 3) From 4000 - 6000 birds. The results revealed that 83 percent of the respondent

farmers were rearing the poultry birds on small scale i.e. up to 2000 birds; 10 percent respondents were in the range 2001-4000 birds; while, a small number of 7 percent respondents were having up to 6000 poultry birds on at their farms (Table 1). The results of the instant study are in conformity with the results of Farooq *et al.* (2001), based on the study conducted in Mardan, NWFP, showing that majority of the farmers were having small flocks and the net profit was lower when the flock size was < 1500 birds.

The development of poultry sector in Pakistan and all over the world has transformed this business from subsistence level to commercialization. The farmers have adopted this business as primary source of their income. The results of the study revealed that 80 percent of farmers have adopted poultry farming as their main profession as primary source of income while 20 percent farmers have adopted it as secondary source of their income (Table 1).

Table 1. Size of poultry farms and business commitment

Category	Number	Percent
Farm Size		
Up to 2000 birds	50	83
2001 to 4000 birds	6	10
4001 to 6000 birds	4	7
Total	**60**	**100**
Business commitment		
Full time	48	80
Part time	12	20
Total	**60**	**100**

Source: Survey Data 2003-04

5. Access to credit

Access to credit is an important instrument that enables farmers to acquire command over the use of working capital and proper inputs for a better yield. It is commonly believed that credit availability for small farmers is one of the main indicators of rural

development. But in case of poultry farming, it was found that only 2 percent poultry farmers availed the institutional credit from Zari Tariqiati Bank Limited (ZTBL), while 98 percent did not borrow the loan from any bank (Table 2).

Table 2. Status of institutional credit

Status	Number	Percent
Status of access to institutional credit		
Borrowed the credit	1	2
Did not borrowed the credit	59	98
Total	**60**	**100**
Status of purchased of poultry feed		
Purchased on credit	54	90
Purchased on cash	6	10
Total	**60**	**100**
Reasons for purchase of poultry feed on credit		
Lack of finance	43	72
Routine of the market	17	28
Total	**60**	**100**

Source: Survey Data 2003-04

It was also found that that 90 percent respondent farmers purchased the feed on credit from the feed dealers and remaining 10 percent purchased it on cash. The farmers who were forced to purchase poultry feed on credit reported their (72 percent) inability of having requisite capital while remaining 28 percent viewed it as the routine of poultry farming business (Table 2).

b. Economic analysis of poultry farming

1. Poultry production

It was investigated and observed that the poultry production varies from farm to farm and depends on: No of birds at the farm; Mortality rate in the flock; and, quality of feed and ratio of pure breed supplied. The average production of a standard poultry farm having 1000 birds with the mortality rate of 5% was found 42 mds (1662 kg) with 1750 grams average live weight of a bird (Parker 2003).

2. Poultry prices

There is frequent price variation in poultry products as well as day old chicks markets. Seasonal price variation is also observed in day old chick ranged from Rs.11/- to Rs.22 i.e. the price was higher in winter season and lower in summer season. Seasonal price fluctuation was mainly attributed by the fact that farming is at peak in winter and lowest in summer due to harsh climatic conditions less suitable for poultry farming. Like wise, the prices of poultry birds also varied from time to time and season to season but there is no thumb rule for poultry prices. It was also observed that the sale prices of produce ranged from Rs.38.00 to Rs.54 per Kg in summer season and Rs.39.00 to Rs.57 per Kg in winter season (Table 3).

Table 3. Average sale prices of poultry

Season	Minimum Price	Maximum Price	Mean
Summer	38	54	46
Winter	39	57	48

Source: Survey Data 2003-04

3. Cost of production

Total cost (TC) is defined as the sum of fixed cost (FC) plus variable costs (VC) i.e. TFC + TVC + TMC = TC (Bishop, and Toussaint, 1958). The total cost of production was calculated to determine the input-output relationship. However, it was found that majority of the poultry producers have only incurred the variable cost on poultry production as shown in Table 4. The variable costs are specific to an enterprise and vary with its scale i.e. variable cost has direct relationship with the level of output. The variable cost includes the cost incurred on: day old

chicks; feed; vaccination; energy charges; litter; lime and medication; wages of casual labor; and, others day to day expenditure of the farm. These costs are known as working capital required for the production cycle (Nix, 1979).

The estimated TVC of each flock of 1000 birds in the instant study was found Rs.69370/ however, it varies from time to time and area to area as reported by Farooq *et al.* (2001) as Rs.41380/- in Mardan, NWFP and Khair (2002) as Rs. 57700/- in Pishin, Balouchistan. The cost variation is explained by a number of socio-economic and geographic factors.

Table 4. Cost of production of 1000 birds (flock)

Cost items	Cost (Rs)
A)Fixed costs	
a) Cost of permanent labor	2700
b) Rent of shed	1500
Total fixed cost	**4200**
B) Variable Costs	
Price of day old chick	18000
Cost of feed	42350
Cost of **wood** (maunds)/ flock	800
Cost of electricity/flock	1000
Cost of vaccination	1900
Cost of lime	160
Cost of litter	960
Total variable cost	**69370**
C) Marketing cost	0
Total marketing cost	**0**
Total (A+B+C)	**69370.00**

Source: Survey data, 2003-04

Notes:

1. Fixed cost is estimated by calculating all the costs incurred at initial stage of Poultry farming business. The main costs involved are purchase of land, construction of poultry shed and installation of accessories (water pump, feeding pans, water pans and electric premises). In sampled area, majority poultry farmers hired the poultry sheds so in this case the fixed cost include rent of the shed and wages of permanent labor and their opportunity cost in case of owned shed and family labor.

2. Marketing cost are the expenses required in bringing the goods and services from farm to market. This term frequently used to estimate the expenditure incurred on movement of commodity from farm gate to the ultimate consumer. The marketing costs in case of poultry in sampled area are not applicable because collection agent collect the poultry birds from the poultry farm and supply it to the retailer so poultry producer did not incur any marketing cost.

4. Net Returns

Net returns are defined as difference between total revenue (TR) and total cost (TC) i.e. TR-TC. Net returns were determined by subtracting total cost of production from total income per flock realized by the poultry producer. The net returns given in Table 5 indicate that the average net return earned by the selected producers were Rs.8744/- per flock of 1000 birds. Similar results were found in Mardan, NWFP, where the net return was Rs.7920/- per flock of 1000 birds (Farooq *et al.*, 2001), while net income per flock in Pishin, Balouchistan was Rs.6425/- (Khair, 2002).

Table 5. Net returns of poultry producers

Items	Net Returns
Quantity sold (kgs)	1662
Price (Rs/ kg)	47
Total revenue (Rs ./ flock)	78114
Total cost (Rs./ flock)	69370
Net returns (Rs./ flock)	**8744.00**

6. Value of input to value of output ratio

Ratios of the value of output to input are calculated by dividing as values of output by total costs. The input-output ratio in case of poultry (broiler) is presented in Table 6. It is indicated that the ratio was 1: 1.12. It is clear that the poultry producers received Rs.1.12/ rupee invested on inputs. Same pattern was recorded in Pishin (Balouchistan) that showed the input-output ratio as 1:1.1 (Khair S.M, 2002). It is seen that the poultry business was not returning high profits in the study area.

Table 6. Value of input to output (returns)

Items	input-output ratio
Input cost (Rs./ flock of 1000 birds)	69370
Output (returns) Rs/ flock	78114
Ratio	**1 : 1.12**

Conclusions and Recommendations

The economic analysis of poultry has been carried out on the basis of primary data collected from Mirpur district of AJK. It was found that majority poultry farmers have adopted this business as a primary source of their income and fall in the category of small group (1000-1500 birds). Moreover, they are financially weak and forced to rely on non-institutional source of credit due to the limited credit facility extended by the financial institutions. Input–Output price variation is also found higher resulting in destabilization of the farmers' income. Although, the farmers have managed to keep the mortality rate on lower side under normal circumstances, however, the marginal efficiency of the capital is not promising for investors of this sector due to high cost of production. It is recommended that:

1) Govt. of AJK should establish or assist the private sector in establishment of commercial hatcheries in AJK to ensure the availability of day old chick on cheaper prices to reduce the cost of production of poultry farmers.

2) Poultry sale price may be fixed on weekly or fortnightly basis in consultation with producers.

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