



The Pattern of Chicken Production in Quetta (Pakistan)

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Abstract

Poultry farming is widely adopted in Pakistan and almost every farmstead keeps some poultry mainly for consumption and cash sales. The present study focused on the poultry status in Balochistan including status of poultry population, price of a day old chicks, egg price, trend of broiler production. The regression models were used for prediction of layer, broiler, egg and chicken meat production on the basis of last 10 years population; as well as wholesale prices change for poultry products. The layer population at the commercial farms in Quetta shows a marked increase from 2009 (9.55 thousand birds) to 2018 (27.50 thousand birds); broiler production from 72.80 thousand birds in the year 2009 to 795 thousand birds in the year 2018; egg production from 201 thousand in the year 2009 to 5150 thousand in the year 2018; chicken meat production increased from 111772 metric tons in the year 2009 to 587000 metric tons in the year 2018.

Keywords: Layer, Broiler, Table eggs, Chicken meat, Population

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INTRODUCTION

Science and technology have made for great expansion of the poultry industry in recent years. The most nutritional programs for people can be improved by the inclusion of eggs or poultry meat, because poultry products are of the highest nutritional quality (1). Poultry farming is widely adopted in Pakistan and almost every farmstead keeps some poultry mainly for consumption and cash sales. Religions and cultural considerations are also amongst the reasons for keeping chickens by resource poor farmers, particularly in the third world countries. Similarly, households keep birds for household consumption, sale and reproduction purposes including other social and cultural roles (2). Data obtained regarding the number of day old chicks supply in Quetta and other districts, district level government poultry farms and the district-wise total poultry in Balochistan province. The information gathered regarding the government poultry farms established in various districts of Balochistan province and concluded that there are ten government poultry farms established for the poultry development. From these, government poultry farm Khuzdar was established in 1974, and government poultry farm Sibi in 1975; while government poultry farm Nushki, Zhob, Panjgor and Gwadar were established in 1976. The government poultry farms Pishin and Loralai came into existence in 1979; while at Kohlu, the government poultry farm developed in 1983; in district Muslim Bagh 1985 and government poultry farm at Pasni developed in the year 1988. Present study focused on the poultry status in Balochistan including status of poultry population, price of a

day old chicks, egg price, trend of broiler production in 2018, day-old chicks supply from private companies in Balochistan, and its cumulative comparison.

METHODOLOGY

The data used in this study were collected from different secondary sources. For this purpose survey of various organizations and government institutions was carried out to collect the data. The information regarding poultry farms, situated in different areas of Quetta, information regarding the broiler, poultry strains and the past 10 years (2009 to 2018) poultry industry situation was also assessed to compare with the present economic situation of poultry industry. The data analyzed using *t*-statistical techniques, namely uni-variate, weighted mean procedures and general liner model (GLM) procedure. To account for the wide variability in flock size, weighted mean were calculated instead of simple averages, using the following equation (5)

$$\bar{X} = \sum W_i X_i / \sum W_i$$

Where, the " \bar{X} " is weights mean of DOC, " X_i " the variable and " W_i " the weight factor/number for particular variable. The following statistical model constructed adopting the procedure of Steel and Torrie (1981).

$$Y_{ijklmno} = \mu + a_i + b_j + c_k + d_l + e_m + FN + (axb)_{ij} + g_{ijklmno}$$

Where $Y_{ijklmno}$ was the response variable (amount of grower ration consumed). μ population constant common to all observations, " μ " the effect of i 0th hygienic condition on the farm. (i =poor, average and good), " b_j " the effect of j -th stocking rate.

A consideration is a numerical or other measurable factor forming one of a set that defines a system or sets the conditions of its operation. In present study, only those broiler breeder farms were selected that already culled their previous

flocks to get a maximum accuracy in econometric in specific flocks (3).

Data Analysis

The data was tabulated for interpretation by using SPSS (Statistical package for social sciences) techniques (4). The coefficient of determination/regression coefficient (R²) for years and population of layers, broilers, production of eggs, meat etc. was worked out.

RESULTS

The regression models were used for future prediction of layer production on the basis of last 10 years population (Table I). The layer population at the commercial farms in Quetta shows a marked increase from 2009 (17.5 thousand birds) to 2018 (27.50 thousand birds).

Layer production

Regression Equation for Layers Production

Predictor	Co-efficient	S.E	T	P-value
Constant	8.01	0.8533	9.40	0.0001
X	0.703	0.1314	5.35	0.0003

The above model of Regression for the number of layers (thousands) farms in different time periods. From the model it can be predicted for the next coming year. The co-efficient (0.704) shows that increase the number of layers at the farms is one year change. The model also projected layer population of 22.80 thousand for the year 2012. As R value indicates that 70.3% of the variation of the layer population occurred due to the effect of the independent variables. The estimated coefficients demonstrate the significant impact of independent variable (years) on the layer production. From the model one can predict the type and magnitude of the change in the investigated factor on the layer production in Quetta.

Table I. Layer production for last 10 years (thousand birds) at the commercial poultry farms in Quetta

Years	No.of layers at farms (thousand birds)
2009	17.50
2010	19.56
2011	19.60
2012	19.60
2013	20.06
2014	21.70
2015	24.00
2016	26.00
2017	25.00
2018	27.50

Broiler production

For prediction of broiler production at the commercial poultry farms in Quetta regression models were used on the

basis of last 10 years population. The broiler production at the commercial farms in the study area shows a remarkable increase in the broiler population from 72.80 thousand birds in the year 2009 to 795 thousand birds in the year 2018 (Table II).

Regression Equation for Broiler Production

Predictor	Co-efficient	S.E	T	P-value
Constant	79.56	38.31	2.08	0.065
X	33.146	5.90	5.62	0.0001

The above table shows the co-efficient of regression model of Boiler Production on different time periods. This also shows the co-efficient of Production of Boiler is significant because its p-value is 0.0001 which is less than 0.05. The value 33.146 shows the average increase in the Production of Boiler at every one year. As R value indicates that 33.146% of the variation of the broiler production was due to the effect of the independent variable (years). The estimated coefficients demonstrate the significant impact of independent variable (years) on the broiler production. From the model one can predict the type and magnitude of the change in broiler production in the study area.

Table II. Broiler production for last 10 years (thousand birds) at the commercial poultry farms in Quetta

Years	No.of broilers at farms (thousand birds)
2009	495.00
2010	508.00
2011	549.00
2012	583.50
2013	662.00
2014	620.00
2015	680.00
2016	740.00
2017	728.00
2018	795.00

Egg production

The egg production at the commercial layer farms in the study area shows a significant increase from 2101 thousand in the year 1991 to 5150 thousand eggs in the year 2018 (Table III).

For future prediction of egg production at the commercial layer farms in Quetta, the regression models were employed on the basis of last 10 years egg production trend.

Regression Equation for Egg Production

Predictor	Co-efficient	S.E	T	P-value
Constant	1992.3	147.6	13.50	0.00001
X	83.41	22.73	3.67	0.0004

The above table shows the co-efficient of regression model of egg produced on different time periods. This also shows the co-efficient of egg produced is significant because its p-value is 0.0004 which is less than 0.05. The value 83.41

shows the average increase the egg produced at every one year. As regression value indicates that 83.41% of the variation of the egg production was associated with the independent variable (years). The estimated coefficients suggested significant impact of independent variable (years) on the egg production.

Table III. Egg production for last 10 years (thousand birds) at the commercial poultry farms in Quetta

Years	No. of eggs produced (thousand eggs)
2009	2,101.00
2010	2,390.00
2011	2,031.00
2012	2,106.00
2013	2,200.00
2014	2,200.00
2015	2,305.00
2016	2,680.77
2017	3,150.00
2018	2,317.00

Chicken meat production

Chicken meat production at the commercially developed poultry farms in the study area indicates a considerable increase from 111772 metric tons in the year 2009 to 587000 metric tons in the year 2018.

The forecast of chicken meat production for coming 10 years at the commercial poultry farms in the Quetta developed through regression models on the basis of chicken meat production trend for last 10 years.

Regression Equation for Chick Production

Predictor	Co-efficient	S.E	T	P-value
Constant	116830	25262	4.62	0.001
X	23353	3890	6.00	0.0001

The above table shows the co-efficient of regression model of chicken meat production on different time periods. This also shows the co-efficient of chicken meat production is significant because its p-value is 0.0001 which is less than 0.05. The value 23353 shows the average increase in chicken meat production at every one year. The regression value suggested a variation of 23353 tons in chicken meat production

Table IV. Updates of broiler production in Balochistan is as follows in the table given below

Years	No. of eggs produced (thousand eggs)
2015	3,160.00
2016	4,101.00
2017	4,680.77
2018	5,150.00

with change of each year (independent variable). The estimated coefficients suggested significant impact of years on the increase in chick meat production at commercial poultry farms of Quetta province.

DISCUSSION

The price index suggested that wholesale rate of table eggs upto the year 2018 increased by 195.80 percent over 2001 wholesale price; live broiler price increased by 361.50 percent over 1994; and prices of all kinds of poultry feeds throughout the year 2018 remained around 1600 rupees per 50 kg bag. These results are further supported by Tariq (2000) who found maximum coefficient of variation for egg production trends in Quetta; while the studies of Farooq *et al.* (2002) are also in the agreement of these results (5). However, during survey of commercial poultry farms in the Quetta, it was noted that the prices of all kinds of poultry feeds throughout the year 2018 remained around 1600 rupees per 50 kg bag. The Regression model (r^2) suggested 70.3% of the variation of the layer production; 33.146% broiler production; 83.41% of the variation of the egg production; 23353 tons change in chicken meat production were associated with dependent variable (years) (7). Discussed factors affect profit of broiler producers in the country using regression model as a decision support tool in commercial broiler production and to affect of sale price of broiler were investigated. The model estimates were quite compatible with field observations. In field observations, the most important factors affecting profit in this study were the price of feed and the feed conversion rate (FCR). The correlation matrix of the variables in the regression model shows stronger negative relation between the dependent variable (profit) and these two factors compared to the other variables. The coefficient of determinations were 0.301 and 0.357 for price of feed and FCR, respectively (6). Developed equations to quantify the losses resulting from infection with one of four alternative categories of disease; and a microcomputer spreadsheet program was used to confirm that expenditure on protective measures can be justified (8). Similarly, derived economic values of traits in the integrated system for situations of poultry production where technical parameters or prices of productive factors were changed (20% increase or decrease). A general conclusion from these sensitivity analyses is that the economic values are sensitive to production levels, product prices and feed prices; there are both linear and nonlinear relationships between economic values and production circumstances (9). Concluded that production data collected by these sources can be used to adjust the management decisions as well as, farms. Another study (9) determined the effects of major factors on broiler production using a commercial Cobb 500 broiler flock and reported effects of flock age and egg weight on hatching egg characteristics, fertility, hatchability, salable chick production and broiler performance. The poultry population in Pakistan is increasing gradually and during 2016-17 over 2017-18, the domestic poultry population increased from 77.35 to 78.51; cocks 9.58 to 9.84, hens 36.76 to 37.42, chicken 31.02 to 31.25, eggs 3676 to 3742 thousand numbers and meat 102.40 to 104.43 thousand tons; while in commercial poultry, layers 30.41 to 32.54, broilers 493.40 to 542.74, breeding stock 8.39 to 8.81, day old chicks 515.36 to 566.89, eggs 8137 to 8690 thousand numbers and meat from 603.47 to 662.18 thousand tons (10). Apart from the weaknesses in other economic sectors in Pakistan, the poultry industry has developed tremendously in the last few decades and thousands of people directly and indirectly are economically associated with this sector. The fixed investment in poultry sector is over 200 billion rupees and turnover is about Rs.300 billions annually. In the country, there are about 25000 poultry farms, providing employment and income for livelihood of fifteen hundred thousands people. The annual growth rate of poultry sector in Pakistan is 10-12%, and at present agriculture produce and bio products of agriculture costing Rs. 50 billion are being used in

poultry feeds; while 40% of the total meat consumption is being procured from poultry products.

Assuming management and production factors to be normally executable, commercial poultry production enterprise can be made more profitable if critical standard limits regarding production costs and production of poultry products are predicted and determined with close attention. Aside from prevalent market prices of various poultry goods, variability in cost components is mainly attributable to management conditions (3), size of the operation (9) management conditions (12) and feed efficiency (11). Efforts shall be made to complete the aforementioned activities in the normal range, thus reducing production cost through better planning and management, and alleviating any adverse effect. When production activities are markedly executed, the development of standards for various cost components would offer a guideline for the producer to adjust their budget accordingly, providing better definition of the critical limits beyond which the enterprise will run in loss (12).

The present study was, therefore, an effort to predict commercial production of layers, eggs, broilers and price fluctuation in the Quetta. With all previously mentioned sources of variability in place, a large sample size was needed to investigate the economic status of commercial poultry production in Quetta. Reliability could be increased and error of prediction could be reduced through increasing sample size and/or eliminating certain sources of variability.

CONCLUSION

A comprehensive study in the poultry specialized area in Balochistan shows an up ward growing trend in local broiler, layer and egg production in the area as well as it is beneficial for knowing the actual poultry situation and it was carried out to conduct an analytical evaluation of poultry industry in the Balochistan province of Pakistan.

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