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INPUT-USE EFFICIENCY IN BROILER POULTRY PRODUCTION IN PESHAWAR VALLEY OF KHYBER PAKTUNKHWA

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Efficiency Analysis, Over-utilized, Under-utilized, Peshawar Valley

ABSTRACT

Efficient utilization of inputs is a significant factor for investors engaged in poultry industry. Maximum profit in a business can be attained through resource management. It is the management of a business which ensures minimum wastage of resources. Sound management aims at maximizing returns with minimum investment. The present study focusses on input-use efficiency of commercial broiler poultry production in Peshawar Valley-Khyber Pakhtunkhwa. A total of 105 sample broiler poultry farms were selected through random sampling technique and data were collected for 483 flocks. The empirical results of the log-transformed function show that at 5% probability level, cost of day-old chicks, feed, flushing, labour, rent and miscellaneous cost has a positive and significant effect on the quantity of broiler poultry production as these variables turned out to be significant, while cost of medicare has a negative and insignificant effect on the quantity of broiler poultry production. The results of efficiency analysis of input showed that some inputs were overutilized while the others were underutilized. The efficiency indicators for poultry feed (0.46) and for medicare (-20.45) showed that poultry feed and medicare were overutilized and inefficiently used whereas day-old chick (2.09), flushing (636.11), labour (56.16) rent (695.15) and miscellaneous (320.81) were under-utilized which may be due to lack of experience of the sampled farmers. It is recommended that in the case of feed and medicare, the broiler farmers need to decrease the use of these over-utilized inputs while in the case of day old-chicks, labour, rent, and miscellaneous costs, the broiler farmers require to increase the use of these inputs for efficient and optimum utilization of inputs. To efficiently run the broiler poultry business, broiler poultry farmers should be properly trained in the area of resource management to reduce production costs.

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INTRODUCTION

Efficiency, namely, the utilization of resources, is one of the most important topics of economic theory (Kumbhakar, 1991). Efficiency is the relationship between what an organization (producer, production unit, or any decision-making unit) produces and what it could feasibly produce, under the assumption of full utilization of the resources available, as stated by Kumbhakar and Lovell (2000). The term 'efficiency' refers to a situation where resources are used to their capacity so that no resources are wasted. It is therefore a measure of efficiency accounting for a single output and multiple inputs. The efficiency of an economic unit is a 'holistic measure', in that it takes account of all resources used and all outputs produced in determining 'how well' or 'how effectively' the decision-making unit combines inputs to produce output. Managers face serious and complex challenges while managing the required resources for the benefit of their organization.

The maximum production in poultry production depends on the environment, quality of resources used in the process of production, and technical knowledge to use the resources in the process of production. Optimum output in broiler poultry farming needs careful management of resources employed. (Nayer, 1989). The professional skill of the farmer and cost of production are the inputs in broiler farming. These include all the management activities and utilization of the available resources. Efficient use of professional skill plays a vital role in the management of the flock and results in high production and high profit. The other part of the input is the cost of production. Both fixed and variable costs are involved in broiler production. Fixed cost includes the cost of building and equipment. Efficient utilization of fixed cost items results in reasonable profit margins. A well-constructed house equipped with appropriate equipment ensuring better hygienic and management conditions will be more economical than a house with poor hygienic and management conditions. Variable cost includes the cost of day-old chick, bedding, brooding, feed, medicine, labour, electricity, transportation and miscellaneous expenditure. Any increase or decrease in variable cost would result in a considerable increase or decrease in profit margins.

In Pakistan poultry farming is concentrated with broilers and layers which are grown for poultry meat and eggs respectively. The poultry industry and has employed 1.5 million labour forces in the country. The share of poultry in agriculture and livestock is 7.5% and 12.7% respectively. The current investment in poultry sector is more than 1082 billion rupees. The share of poultry meat in total meat production in the country has increased from 31.17 percent in 2017-18 to 33.56 percent in 2018-19 (GOP 2018-19). Ali et al., (2014), Bano et al., (2011), Imtiaz (2012), Mohsin et al., (2008), Oladeebo and Ambe-lamidi (2007), , Singh et al (2010), Afzal and Khan (2017) studied profitability of various size of poultry farms at various locations in the world and found that poultry business is a profitable business. Oladeebo and Ambe-lamidi (2007) determined the profitability of poultry production and found it

profitable among youth poultry farmers. Singh et al (2010) found a direct relationship between BCR and farm size.

Fawaaz et al. (2013) determined the economic efficiencies of different resources used in broiler production. The resulting ratios of labour, cost of equipment and cost of feed were found less than unity which shows over utilization of these inputs and therefore a decrease in their quantity which result in an increase in output and level of profit in the study area. Afolabai et al. (2013) also found that average farmer of poultry business was underutilized in the study area.

Bethel E et al (2016) analyzed the technical efficiency of poultry farmers in the Cross River State, Nigeria. The overall technical efficiency for poultry farmers was found to be 58 percent in the study area which suggested that technical efficiency could be increased by 42 percent given the current level of technology if the available resources are efficiently utilized.

Oluwatayo et al (2016) analyzed the profitability and efficiency of smallholder broiler production in Mopani district of Limpopo province, South Africa, and also determined the factors affecting the productivity of broiler production in the study area. A positive correlation was found between the stock size and output of broiler produced. The study revealed that the output of the broiler increased with an increase in the spending on vaccines. A negative relationship was found between the farmer's age and his technical efficiency. Dwivedi et al (2016) find out the economic viability of broiler production and to determine the resource use efficiency in the production process. The estimates of the Cobb Douglas production function show that labour was positive and non-significant at both 1% and 5% level of significance while medicare and feed were significant at 1% level of significance. Pawariya & Jheeba (2015) studied the economics of resource use efficiency in poultry enterprises with the objective to examine the factors affecting poultry production in Jaipur. The coefficient of regression for expenditure on chicks, labour, feed and veterinary expenses were statistically significant. Resource use efficiency for the major cost item i.e. feed was found to be 0.27 which shows over utilization of feed input. Resource use efficiency for veterinary services was found to be 2.43 which shows underutilization of veterinary expenses and indicates that investing one rupee on veterinary service can result an increase in profit by 2.43 rupees. The resource use efficiency indicator for day-old chick, transportation and labour was 3.48, 2.89 and 1.72 respectively indicating that investment of one rupee more on these inputs would result in a gain in profit of Rs.3.48, Rs.2.89, and Rs.1.72 respectively.

Technical and economic efficiencies of poultry farmers were estimated by Ohajiany *et al.* (2013) in a Nigerian state, Imo. The study concluded that the poultry farmers in the study area were technically and economically inefficient in the use of available resources. The allocative efficiency was also investigated by Eze *et al.* (2013) among broiler farmers in the Imo state of Nigeria. The allocative efficiency indices showed that farmers did not achieve absolute allocative efficiency. Vincent et al (2010) studied resource use efficiency in poultry production in Kenya. Results of the resource use efficiency index showed that poultry farmers have over-utilized the labour input. A positive sign of efficiency indicator for veterinary services was noted in the study, indicating that the vaccines, drugs, and chemicals were underutilized and hence its increase can increase production and profitability. Over utilization of feed, input was noted in the study which needs to be minimized to increase profitability in the study area. Equipment were found to be underutilized. The ratio of Marginal Value Product (MVP) to Marginal Factor Cost (MFC) for each input calculated by Reddy (2013) to test for its equality to 1 to assess the resource use efficiency of input factors concerning farm size in Paddy cultivation in the Nellore district of India. Technical, allocative, and economic efficiencies in farms in the study area were found using Data Envelopment Analysis (DEA) by Mahjoor (2013) in Fars province, Iran to see the profitability and economic efficiency of the poultry production system. The results of the DEA analysis reveal that technical,

allocative, and economic inefficiencies were present in the broiler farms in the study area which indicates a possibility of profitability of the broiler farms. Farm size showed a positive effect on technical efficiency level. Factors like farmer's age, education, experience, and training increased the farmer's technical efficiency.

A very few studies have been conducted to assess efficiency of poultry farms in Khyber Pakhtunkhwa, Furthermore, studies on the subject matter mostly focused on very limited geographical area and are based on small samples besides with simple and outdated methodology. In nut shell this study will be superior to other studies due to the novelty of work focussing on analysing the input use efficiency. This study also covers the methodological and low sample deficiencies reported in other studies. A reasonably large sample is selected in order to assure that the sample selected is representative of the targeted population. It will help to get a better picture of the situation of industry in the targeted area.

Material and Methods

On the basis of climate and geography the province of Khyber Pakhtunkhwa is divided into three regions i.e. the central, southern and northern regions. The central region is known as Peshawar valley consisting of plain area surrounded by mountains from all sides. It comprises five districts i.e. provincial capital Peshawar, Nowshera, Mardan, Charsadda and Swabi. Climate of the region is tropical and humid.

The Peshawar Valley is selected for conducting the present research on the basis of easy availability of data and socio-economic conditions. Therefore, all the poultry farmers of Peshawar Valley serve as universe of the study.

Sampling frame, Sampling Technique and Sample Size

Census is difficult because of limitations imposed by time and money constraints. Sampling helps in alleviating these limitations. Random sampling technique was used to select samples from the study area. This technique is useful in overcoming the selection bias. To determine appropriate sample size the following statistical formula was used (Ser Parel et al,1973):

$$n = \frac{K^2 \delta^2 N}{N e^2 + K^2 \delta^2} \quad \text{.....3.1}$$

where

- n sample size,
- K maximum accepted error. It is one third of the sample variance and its maximum value is 3,
- δ^2 variance, (e/K)
- e error, and
- N the size of population

Each district of the valley was considered as a separate independent population and an appropriate sample from each district was selected through the proportional allocation technique. The sample respondents were selected randomly from these districts and interviewed.

Table 1

Distribution of Sample Respondents		
Location	**Sample Respondents**	**Percent**
Peshawar	31	29.52
Mardan	26	24.76
Swabi	21	20.00
Charsadda	13	12.38
Nowshera	14	13.33
Total	105	100

Source: Field Survey

Data Sources and Data Collection

The research is based on primary data. The primary data were collected through a pre tested interview schedule particularly designed for this study. Secondary data were used for reference and comparison.

Analysis of Data

In order to achieve objectives of the study data was analysed with the help of SPSS and Excel Software. The following statistical and financial techniques were used to analyse the data:

i. Budget Technique
ii. Regression Analysis
iii. Input use efficiency index

Budgetary Technique

The budgetary technique involves the cost and return analysis. It was used to determine the profitability of broiler poultry farming in the study area.

Model Specification

Profit (Π) = TR- TC ……..3.2

Total Revenue (TR) = Total Farm output (TFO) x Unit Price (P)

Total Cost (TC) = Total Fixed Cost (TFC) + Total Variable Cost (TVC)

Gross Margin (GM) = GR—TVC

Net Farm Income (NFI) = GR—TC ……..3.3

Regression Analysis

Ordinary Least Square (OLS) was used to determine the effect of the different inputs affecting the output of broiler poultry farming. Coefficients of inputs used under the Cobb-Douglas specification model were estimated and these were used to examine the input-use efficiency and to estimate the return to scale value.

In order to arrive at the efficiency of the different inputs of production and the nature of returns to scale in broiler poultry farming, the production function of the Cobb-Douglas type was used (Khan et al., 2017). The function may be stated as under:

$$Y = AX_1^{\beta 1}.\ X_2^{\beta 2}.\ X_3^{\beta 3}\ldots\ldots\ldots\ldots\ X_n^{\beta n}\ e^{\varepsilon} \ldots\ldots\ldots\ldots\ldots\ldots 3.4$$

Where Y = Total value of output
A = Constant (used for constant technology)
X*i* = Inputs (X 1, X*i*2 …) used in the production

B*i* = input productivity

e^{ε} = random error term

It is from the co-efficient of the input resources that the input-use efficiency was determined and subsequent returns to scale of the enterprise were determined. βi's can be derived from the sample data with the help of Cobb-Doulas production function as: (Vincent *et al*. 2010)

$$\ln Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \ldots\ldots\ldots\ldots + \beta_n \ln X_n + e^{\varepsilon} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.5$$

Where ln = Natural logarithm

Y = Amount of poultry production (Kilogram)

X_1 = Cost of day-old chicks purchased

X_2 = Cost of feed

X_3 = Bedding and Flushing Cost

X_4 = Cost of medicine, vaccine

X_5 = Cost of labour input

X_6 = Rent Cost

X_7 = Miscellaneous cost

e^{ε} = Random error term

Co-efficient β_1 is the percent change in output resulting from a one percent change in the input X_1. Similarly, the co-efficient on each input is the percent change in output resulting from a one percent change in the input. In a Cobb-Douglas production function, the sum of these co-efficient $\beta_1 + \beta_2 + \beta_3 + \ldots\ldots\ldots\ldots + \beta_n$, is the degree of homogeneity, which measures whether the production function is constant, increasing or decreasing returns to scale. Three possibilities exist:

If $(\beta_1 + \beta_2 + \beta_3 + \ldots\ldots\ldots + \beta_n) = 1$ there exist constant return to scale

If $(\beta_1 + \beta_2 + \beta_3 + \ldots\ldots\ldots\ldots + \beta_n) < 1$ there exist decreasing return to scale

If $(\beta_1 + \beta_2 + \beta_3 + \ldots\ldots\ldots\ldots + \beta_n) > 1$ there exist increasing return to scale

Input-use Efficiency

To achieve the objectives of the estimating efficiency of the input used in broiler poultry production, the study used a marginal analysis procedure. Several studies have adopted this procedure to achieve similar objectives. (Fawaaz *et al*. 2013; Reddy et al, 2013; Akighir, 2011; Majumder *et al*. 2009; Suresh *et al*. 2006). To determine the economic efficiency of the inputs used in broiler poultry production, the marginal value product (MVP) of each input was compared with marginal factor cost (MFC) and the efficiency indicators computed.

The mean estimates (output returns and input costs) of the log-linearized Cobb-Douglas production function was used in the computation of marginal value product (MVP) of each of the input with its marginal factor cost (MFC). A statistically significant difference between an input's MVP and MFC suggests sub-optimality in the utilization of that input.

In order to test the efficiency, the ratio of marginal value product (MVP) to the marginal factor cost (MFC) for input was computed and was tested for its equality to 1, i.e.

$$\frac{MVP}{MFC} = 1$$

$$\text{Input- use efficiency} = \frac{MVP}{MFC} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.6$$

MVP = Marginal Value Product

MFC = Marginal Factor Cost (price per unit input).

The MFC of input can either be taken as the market price or geometric mean value of the input

costs, or depreciation of durable assets.

When Input-use efficiency (IUE) = 1, inputs are optimally utilized

When IUE < 1, inputs are over-utilized, hence decrease in the quantity use of the resource will increase the profit.

When IUE > 1, inputs are under-utilized, hence increase in its rate of use will increase the profit

The marginal productivity of a particular input represents the addition to gross returns in value term caused by an additional one unit of that input, while other inputs are held constant. The most reliable, perhaps the most useful estimate of MVP is obtained by taking resources (Xi) as well as a gross return (Y) at their geometric means. Since all the variables of the regression model were measured in monetary value, the slope coefficient of the explanatory variables in the function represents MVPs, which were calculated by multiplying the production co-efficient of given inputs with the ratio of geometric mean (GM) of gross return to the geometric mean of the given input. i.e.

$$\text{MVP (Xi)} = \frac{BiY(GM)}{Xi(GM)} P_{yi} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.7$$

Bi = Regression co-efficient of the variables

P_{yi} = Per unit price of output

Y (GM)= Mean value of the geometric mean of gross return

Xi (GM) = Mean value of the geometric mean of the *i*th variable input

Diagnostic Tests

To know whether econometric issues exist in the data or not. Diagnostics tests were applied i.e. Heteroscedasticity test, VIF (variance inflation factor) test for multicollinearity and D.W (Durbin Watson) test for autocorrelation. The normality of the data was checked with the Jarque-Bera test.

Results and Discussions

The study was designed to estimate the effects of different input factors on broiler poultry production and efficiency of different inputs used in broiler poultry farms in Peshawar Valley of Khyber Pakhtunkhwa. The data showed that almost all the respondents were in the prime age group with the majority of more than 80 percent were below 40 years. As the age cohort increases, the number of respondents decreases. Out of the total respondents, 81 percent were literate while the remaining 19 percent of the respondents were illiterate. Most of the respondents had completed 10 years of education. Some of the respondents were even better educated and completed university-level education. Hence the broiler poultry farming sector of the sampled population was dominated by educated respondents. Most of the respondents were lacking experience as only 13 percent of respondents reported to having ten years or more experience in broiler poultry farming whereas, a vast majority of 59 percent of respondents reported to having less than 4 years of experience.

There were wide spread variations in various farms. Some were very large; others were very small and some were medium. For the purpose of this study, broiler poultry farms have been divided into three major groups i.e. large farms, medium farms and small farms. The farms were considered large if it has the capacity of more than 4000 birds. The poultry farms were considered of medium size if their capacity ranges from 2001 to 4000 birds. Poultry farm capacity up to 2000 birds was considered as small broiler poultry farms. The surveyed area was predominantly occupied by medium and small-size farms.

In Peshawar, the highest number of broiler poultry farms were large size while in Charsadda, the highest number was found of small size broiler poultry farms. In Mardan, Swabi and Nowshera, most of

the broiler poultry farms were medium size. The highest number or percentage of flocks were produced by District Peshawar followed by District Mardan, District Swabi, District Nowshera and District Charsadda respectively. The data show that out of 483 flocks produced by the sampled farmers during the year, maximum of 138 flocks was produced in the second quarter i.e. March to May. In other quarters production of flocks was mostly evenly distributed. The lowest average mortality rate was reported in the largest capacity farms and the highest was reported in the smallest farm size. It may be because the large farms are more economical than the small farms. The size wise distribution shows that in the small farms average mortality rate was high as compared to large farms. Most of the respondents were carrying the poultry business in the small and medium size because for the small and medium size require less money, cost, risk and it is also easy to handle. The poultry farms were also categorized into three different groups that are small, medium and large (Imtiaz, 2012; Afzal and Khan, 2017 and Khan and Afzal, 2018).

Total Annual Cost of Different Inputs

The total average annual cost of various inputs of broiler poultry farms was also calculated. The table shows the minimum, maximum, and average annual cost per flock of various inputs with standard deviation. The average total cost of various inputs like chick cost, feed cost, brooding cost, flushing cost, medicare cost, labour cost, rent and miscellaneous cost for broiler poultry farms are given in the following table.

Table 2

Total Annual Cost of Different Inputs

Cost Items	Minimum	Maximum	Mean	Standard Deviation
Chick Cost (DOC)	66000	1071200	494921	244815
Feed Cost	317800	3501225	1606378	868475
Brooding Cost	1000	151000	54799	35627
Flushing Cost	2000	124250	21333	17467
Medicare Cost	16000	382050	146899	102959
Labour Cost	15000	360000	141175	83283
Rent	9000	120000	59305	28748
Miscellaneous Cost	3000	53000	17036	10050

Source: Field Survey, 2018

Flock wise Profitability of Broiler Poultry Farms

The profit of a broiler poultry farm can be calculated by subtracting the total cost of a broiler poultry farm from the total revenue of a broiler poultry farm. The revenue of a farm can be obtained from revenue from the main product, gunny bags and litter while the cost of a farm is the sum of the cost incurred on all the inputs. The minimum total revenue per flock was 426020.00 rupees while the maximum total revenue was 5579660.80 rupees and the average total revenue per flock was 2639375.32 rupees with a standard deviation of 1364192.54. The minimum total cost per flock was 431300.00 while the maximum total cost was 5528425.00 rupees and the average total revenue per flock was 2541845.43 rupees with a standard deviation of 1336444.02. The minimum profit per flock was -216628.00 while the maximum profit per flock was 565885.80 and the average profit per flock was 95617.54 rupees with a standard deviation of 118555.36 (Table 3).

Table 3

Flock wise Profitability of Broiler Poultry Farms

Particulars	Minimum	Maximum	Mean	Standard Deviation
Total Revenue	426020.00	5579660.80	2639375.32	1364192.54
Total Cost	431300.00	5528425.00	2541845.43	1336444.02
Profit	-216628.00	565885.80	95617.54	118555.36

Source: Field Survey, 2018

Estimation of Model

The empirical results of the log-transformed model for estimation of the amount of production of broiler poultry farm are stated in the below table.

Table 4

Estimation of Amount of Production of Broiler Poultry Farm

Independent Variables	Coefficient	Standard error	t-stats	Significance
LN_DOC	0.086	0.039	2.202	0.030
LN_FEED	0.173	0.065	2.635	0.009
LN_FLUSHING	0.101	0.044	2.257	0.026
LN_LABOUR	0.186	0.074	2.518	0.013
LN_MEDICARE	-0.064	0.077	-0.820	0.414
LN_RENT	0.157	0.070	2.251	0.026
LN_OTHER COST	0.075	0.039	1.896	0.061
Constant	6.184	0.712	8.683	0.000
R Square	0.639			
Adj. R Square	0.611			
F Statistic	23.283 (P value=0.000)			
Return to Scale	0.714			
Durbin Watson	1.988			
N	105			

Source: Field Survey, 2018

The log-transformed function shows the effect of the cost of different inputs on the amount of broiler poultry product of broiler poultry farms. The empirical results of the log-transformed function show that amount of poultry product of broiler was positively affected by the cost of day-old chicks, feed, flushing, labour, rent, and miscellaneous costs while it is negatively affected by the cost of medicare. A percent increase in the cost of day-old chicks will increase the amount of broiler poultry produced by 0.086 percent. A percent increase in the cost of feed, flushing, labour, rent and miscellaneous cost will increase the amount of broiler poultry product by 0.173, 0.101, 0.186, 0.157, and 0.075 percent respectively, while a percent increase in the cost of Medicare will decrease the revenue of broiler poultry product by 0.064 percent (Table 4). The results of the present study are also in conformity with the studies conducted by Afzal (2015), Imtiaz (2012), and Khan and Afzal (2018).

As evident from t-ratios, at 5% probability level, cost of day-old chicks, feed, flushing, labour, rent, and miscellaneous cost has a significant effect on the amount of broiler poultry production as these

variables turned out to be significant, while at the same probability level, cost of medicare has an insignificant effect on the amount of broiler poultry production as this variable turned out to be insignificant (Table 4).

The value of R Square indicates that 63% of the variation in the amount of production of broiler poultry product was due to the cost of day-old chicks, feed, flushing, labour, rent and miscellaneous costs. The F value shows aver all significance of the model that was highly significant (Table 4).

Efficiency Analysis of Broiler Poultry Farms

The marginal value product of a particular input is equal to the marginal fixed cost that equality condition would ascertain the optimum use of input or efficiency of a particular input. If the marginal value product divide by the marginal fixed cost is less than one, the input would be over-utilized while if the marginal value product divide by the marginal fixed cost is greater than one, in this case, the input would be under-utilized.

From table 5, it is evident that for day-old chicks, the ratio of MVP and MFC is 2.082, indicating that the input was underutilized. For feed, the ratio of MVP and MFC was 0.459, which shows that the input was over-utilized. For flushing and labour, the ratios of MVP and MFC were 636.101 and 56.154 respectively, indicating that both the inputs were under-utilized. The ratio of MVP and MFC for medicare was -20.48 showing that the input was over-utilized. For rent and miscellaneous costs, the ratios are also greater than unity, indicating that both of the inputs are under-utilized. Hence, only two inputs are over-utilized are feed and medicare while the remaining inputs like day old chick, flushing, labour rent, and miscellaneous are under-utilized inputs. In the case of feed and medicare, the broiler farmers needed to decrease the use of these over-utilized inputs while in the case of day-old chicks, labour, rent and miscellaneous costs, the broiler farmers require to increase the use of these inputs for efficient and optimum utilization of inputs. Studies conducted by Ali et al., (2014) have also found similar results.

Table 5

Efficiency of Variou Inputs in Broiler Poultry Farms

Independent Variables	MVP	MFC	Input Use Efficiency	Remarks
DOC	52.15012	25.05	2.081841	Underutilized
Feed	36.71079	79.98	0.459	Over utilized
Flushing	1711.114	2.69	636.1018	Underutilized
Labour	413.8592	7.37	56.15458	Underutilized
Medicare	-149.704	7.31	-20.4794	Over utilized
Rent	1390.29	2.00	695.1448	Underutilized
Miscellaneous	949.5849	2.96	320.8057	Underutilized

Source: Field Survey, 2018

Conclusions

The present study concludes that majority of the broiler poultry farmers in the study area were young and educated but lacked relevant experience. A total of 483 flocks were produced by 105 sampled broiler poultry farms during a period of one year with an average of 4.6 flocks per year. This shows that on average, for almost half of the year, the broiler poultry farms remain without broilers which results in high input costs. Feed was the main cost item with a percentage share of 62.98 in the total cost followed by cost of day-old chicks with a percentage share of 19.72.

The empirical results of the log-transformed function show that the cost of day-old chicks, feed, flushing, labour, rent and miscellaneous cost has positive and significant effect on the amount of broiler

poultry production while the cost of Medicare has a negative and insignificant effect. The efficiency analysis results show that feed and medicare were over-utilized and the usage of these inputs need to be decreased while the remaining inputs like day old chick, flushing, labour rent, and miscellaneous are under-utilized inputs and require more use of these inputs. None of the inputs was found at optimal level with respect to its use in the production. To efficiently run the broiler poultry business, broiler poultry farmers should be properly trained in the area of resource management to reduce production costs. For optimization, the use of feed and medicare need to be decreased due to over-utilization of these inputs while the remaining inputs like day old chick, flushing, labour rent and miscellaneous are under-utilized inputs that require more and proper use of these inputs.

Recommendations

To increase the efficiency of broiler poultry farms in the study area, the following recommendations and suggestions are given in light of the present research.

1. To efficiently run the broiler poultry business, broiler poultry farmers should be properly trained in the area of resource management to reduce production costs.
2. The profitability of broiler poultry farms can be increased by reducing the high mortality rate through proper vaccination, medication, and better management techniques.
3. For optimization, the use of feed and medicare need to be decreased due to over-utilization of these inputs while the remaining inputs like day old chick, flushing, labor rent and miscellaneous are under-utilized inputs that require more and proper use of these inputs.
4. The Government should sponsor short courses at regular intervals in broiler management and disease control at its own expenses at various institutes. Such courses should be frequent and open to anybody who would like to attend them.
5. Research efforts should be directed at designing equipment and broiler housing. Feeding of broiler is another area in which research efforts will be rewarding.

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