The Economic Evaluation and Financial Analysis of Poultry Farms in Chahar Mahal and Bakhtiari Province (Case Study of Shahrekord County)

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Abstract: This study aimed to measure total factor productivity by considering two new approaches in industrial Poultry farms in Shahrekord County. The necessary data were collected through completion of questionnaire from 30 poultry farms by stratified random sampling method in the year 2013. In this study, the costs of foods, labor productivity, average productivity, marginal productivity and total factors productivity were evaluated. The results showed that the cost for technical manager was non significant that may due to inappropriate use or failure to use the appropriate manager. Vaccination and drug costs were significant but use of doctor of veterinary medicine was not significant. Labor force and food cost had more significant effects on average productivity, marginal productivity and total factors productivity. The results obtained revealed the possibility of achieving greater efficiency in feed intake and feed conversion ratio by stop wasting food and reduce time broader maintain proper breeding farms is available. The average marginal productivity in groups under study was 17722 units. With this account value of the marginal product of each worker was 637992000 Rial. We demonstrated that the average total productivity for these poultry farms was 3.39; accordingly for every Rail from variable of costs approximately there were 3.5 Rial gross incomes. In summary, it has been indicated if poultry projects are analyzed based on the financial evaluation, economic evaluation will have a greater profitability.

Key words: Poultry farms · Average productivity · Marginal productivity · Total factors productivity · Shahrekord County

INTRODUCTION

Animal and poultry husbandry production projects have a special place in terms of allocation of resources and inputs (Akbari, 2006; Sharma, 1993; Porkand, 2012) [1]. Financial and economic assessment of agricultural projects such as poultry farms is one of the most important activities in the agricultural sector and is very important (Akbari,2006; Haji Rahimi, 2009). Knowledge achieved that the profitability of poultry farms on the basis of activity indices and economic analysis is very important to get optimal decisions in investments in these sectors. Activities, such as dairy and poultry farms are of

important agricultural activities and awareness and profitability condition of these farms for the purpose of investment and financial planning can be very effective (Porkand *et al*, 2012) [2]. Hence, in this study, net Average productivity, Marginal productivity and Total factors productivity are used (Sharma, 1993 [3]: Faostat, 2009 [4]; Wang, 2005). Chaharmahal and Bakhtiyari province is one of the 31 provinces of Iran. It lies in the southwestern part of the country. Its capital is Shahrekord city and it has 6 other counties (Sholeh, 2012). The province is mainly active in the agriculture and animal husbandry sector.200 poultry farms unit are in this province that they are Including 170 broiler farms

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Table 1: Total broiler farms owner (Shahrekord country)

Owner	Unit / Farm	Capacity (Piece)	Percentage
Personally	46	669400	83.63
Cooperation	9	130600	16.37
Total	55	800000	100

(3286000 capacity), 8 units breeding of laying hens farms (217000 capacity) and 2 units' breeder farms (95000 capacity) and they are 55 poultry farm in Shahrekord country with 800000 chicks capacity. About 1760000 tons of poultry are produced in Shahrekord country.

Until 2013 December Amount 55 poultry unit 46 farms of them have managed personally and 9 farms have managed cooperative.

Poultry farmers in some areas have less knowledge of scientific methods of aviculture and they are very high risk to investments (Kamalzadeh, 2008; Haji Rahimi *et al*, 2009). in dairy programs the management program of the dam affects the quality and amount of theirs milk and this is very important to get interest or benefits from them (Dashti, 2009). Requires abundant production of poultry products, especially meat and limited production requires, shows that necessary for attention to optimal use of resources and increase productivity (Berenson, 2003). Productivity indexes that used in the economic analysis and have ability to use to describe and desired position of unit and show Qualitative and quantitative changes in that unit. The objective of this study was to investigate the economic evaluation and financial analysis such as average productivity, marginal productivity and total factors productivity of poultry farm in Chahar Mahal and Bakhtiari Province (Case Study of Shahrekord County) to interpret the present situation and guidelines to improve investment for poultry farmers and the other enthusiasts.

MATERIAL AND METHODS

For this study 30 poultry farms of Chaharmahal and Bakhtiari province (Just located on Shahrekord county and its Suburbs) were selected randomly (n=30) since 2013 to 2014.

Data collected by questionnaire with visiting poultry farmer by researcher and colleagues. Poultry farms were selected as a stratified and randomly (Stratified random sampling model) (Musgrave, 1989; Zarifian, 2010) [5].

Literature: The variables studied in this experiment were: Food and Labor productivity, Average productivity, Marginal productivity and Total factors productivity by estimating production function (Mahmoodieh, 2012; Zarifian, 2010; Diewert, 1992; Haji Rahimi *et al*, 2009).

Calculate the Average Productivity (AP): AP is the unit of input that adds values to the initial product.

$$AP_{Xi} = \frac{Y}{Xi}$$

X_i = Input
Y = Yield

Calculate the Productivity Marginal Productivity (MP): MP is the last unit of input that adds values to the initial product.

$$MP = ei(\frac{Y}{Xi})$$

X_i = Input
Y = Yield
e_i = Stretch of the inputs

Calculate the Total Factors Productivity (TFP): TFP is the production of goods and services than effective input in the production of goods or services (Production factors / Total resources consumed). Based on this definition production unit which has the largest amount of total factors productivity is considered as the most efficient unit (Mahmoodieh, 2012 [6]; Mashayekhi [7], 2011; Diewert, 1992; Hajrahimi *et al*, 2009).

$$TFP = \frac{Y}{\sum_{i=1}^{n} W_i X_i}$$

X_i = Cost of production
Y = Yield
W_i = Share of inputs

RESULTS AND DISCUSSION

Amount 55 poultry unit farms 30 farms were selected randomly that 25 farms of them were managed personally (54.54%) and 5 farms were managed cooperative (9.1%).

In this study to evaluation for Log-linear production function of broiler farms we assumed (Y) as dependent variable = Poultry yield. (X_1 - X_{10}) were as Factors of production. (X_1= The number of chicks, X_2= Total food consumed, X_3= Labor force, X_4= Drug costs, X_5= The cost of vaccination, X_6= Veterinary costs, X_7=Cost of technical officer, X_8= Admission fee, X_9 = Fuel costs and X_{10}= Electricity cost).

Table 2: Broiler farms owner under study (Shahrekord country)*

Owner	Unit / Farm	Capacity (Piece)	Percentage
Personally	25	462790	54.54
Cooperation	5	46330	9.10
Total (Under study)	30	509120	63.64
Total	55	800000	100

According to the regression model with calculated F* value (table -3) we could show that the model was significant and according to the $R^{2**} = 0.814$ we could say that 81.4% of meat production modifications were used in this study. In addition all independent variables as applied are significant. In this study the cost for technical manager was non significant that may due to inappropriate use or failure to use the appropriate manager. In addition vaccination and drug costs were significant but use of doctor of veterinary medicine (DV.M) was not significant.Since usually two important variables (Labor force and food cost) Have significant effects on productivity in poultry farms we also focused on them so we used Back ward selection method for eliminating the least important variables (Wang, 2005; Diewert, 1992; HajI Rahimi *et al*, 2009; Rezitis, 2003).

Data from Table 4 had shown that the mean average productivity for feed in 30 farms was 0.451 and it means feed rate is 451 gram meat per kilogram of feed. According to the definition for Feed conversation ratio (FCR) by animal science, in contrast FCR is inverse of Feed efficiency (Haji Rahimi *et al*, 2009).In this study average FCR was 2.46. In animal science definitions when the FCR for broilers is above 2 it means feed rate is 1 a kilogram live weight per2 kilogram of used food. Since this variable has decreased to less than 2 in developed countries so it must to be consider for poultry farmers for getting higher and better productivity.

Data had shown average marginal productivity for feed on these 30 farms was 0.126 gram per kilogram feed, since the average price of feed per kilo gram was 16000 Rial and the selling price per kg of broilers was 42000 Rial, the final value of each kilogram of feed was 2016, so farmers have used more than optimal range of feed or In other words during the period was more than desirable and economic.

This results obtained revealed the possibility of achieving greater efficiency in feed intake and feed conversion ratio by stop wasting food and reduce time broader maintain proper breeding farms is available.

The mean average labor productivity was 8052; it means for every worker in each period of aviculture 8052 kilogram live weight was produced. The average marginal productivity in groups under study was 17722. With this account value of the marginal product of each worker was 637992000 Rial. Since the salary for each worker usually was between 5000000 Rial, so the value of the marginal product of each worker was much higher than his /her salary. In this study the average total productivity for these poultry farms was 3.39, accordingly for every Rail from variable of cost approximately there was 3.5 Rial gross incomes.

Mahmoodieh *et al*, (2013) showed that feed cost percentage increases in industrial and semi-industrial dairy farms. They also showed that in Shahrekord dairy farms, Factor of productivity is about 1.23 and about 1.41 and about 1.38 times for small, medium and large herds farmers respectively. Total factor productivity is about 1.34 times the flower farms studied. It means when the farmers use 1 unit of their investiture they can raise it to 1.34 units and the benefit for this interest is 0.34 times

Table 3: Log-linear production function of broiler farms (Shahrekord country)

Variables	Constant	Standard error	t Index	Significant level
Constant factor	1.216	0.213	4.988	0.000
The number of chicks	0.312	0.064	4.321	0.000
Total feed consumed	0.295	0.059	5.014	0.000
Labor force	0.214	0.068	3.110	0.000
Drug costs	0.0029	0.019	0.162	0.951
Vaccination cost	0.036	0.022	1.621	0.71
Veterinary costs	0.0059	0.006	0.625	0.324
Technical officer cost	- 0.00057	0.003	- 0.109	0.874
Admission fee	0.0168	0.011	1.879	0.061
Fuel costs	0.0034	0.029	0.102	0.970
Electricity cost	0.0034	0.28	1.152	0.271

$R^{2**} = 0.814$, $R^{-2} = 0.801$, F =32.210, Sig F *= 0.000

Table 4: Productivity measures of broiler farms (Shahrekord country)

No	Food	FCR	Labor	Total	Food (Total)	Labor (Total)
1	0.51	2.51	8200	2.80	0.15	18040
2	0.45	2.41	8000	4.30	0.13	17600
3	0.44	2.25	7800	3.14	0.13	17160
4	0.43	2.21	7840	4.11	0.12	17251
5	0.50	2.31	9100	4.22	0.14	20028
6	0.51	2.45	9000	4.13	0.14	19809
7	0.42	2.56	9150	3.88	0.15	20135
8	0.40	2.26	7900	5.11	0.11	17400
9	0.41	2.28	7680	2.77	0.12	16972
10	0.44	2.24	7890	3.11	0.12	17510
11	0.41	2.19	7910	2.87	0.11	17405
12	0.55	2.54	9500	3.21	0.16	20995
13	0.39	2.10	7340	2.11	0.10	16224
14	0.42	2.20	7500	2.74	0.11	16510
15	0.44	2.21	7640	3.15	0.12	16810
16	0.45	2.26	7740	3.33	0.12	17106
17	0.44	2.24	7710	3.35	0.12	1740
18	0.51	2.49	9240	4.40	0.15	20410
19	0.47	2.37	8600	4.44	0.13	18920
20	0.39	2.06	7300	3.28	0.10	16135
21	0.46	2.31	7500	3.26	0.12	16490
22	0.41	2.21	7100	2.24	0.11	15690
23	0.43	2.24	7750	3.19	0.11	17790
24	0.50	2.50	8880	3.71	0.14	19360
25	0.41	2.21	7900	2.85	0.12	17215
26	0.44	2.28	7800	2.86	0.13	17164
27	0.45	2.34	7900	3.16	0.13	17280
28	0.45	2.33	7860	3.26	0.14	17290
29	0.45	2.34	7940	3.68	0.13	17468
30	0.47	2.33	7890	3.31	0.13	17360
Average	0.451	2.46	8502	3.39	0.126	17722

per unit. Results of this experiment are in agreement with result of (Rahmani, 2007; Mashayekhi, 2011; Haji Rahimi *et al*, 2009).

Haji Rahimi *et al*, (2009) had shown average productivity of intermediate inputs used in feed for poultry in the Kurdistan province is equal to 0.450 gram. They had shown the mean average labor productivity was 8052 and the average marginal productivity in groups under study was 2250.41 and the value of the marginal product of each worker was 24342750 Rial.

Porkand *et al*, (2012) showed that average productivity and average marginal productivity was 38 % and 24 % unit. As they had shown feed variable had highest coefficient (0.642) and then labor force and health variables had high coefficient respectively. In their study average marginal productivity for meat on these farms was 0.240 gram per kilogram feed, since the average price of meat per kilo gram was 31500 Rial and the final value of each kilogram of feed is 7560 Rial.Results of

this study are in agreement with (Porkand *et al*, 201; Haji Rahimi *et al*, 2009 and Mahmoodieh *et al*, 2013) [7-19].

CONCLUSION

In summary we demonstrated that some variable inputs are effective poultry farms production. It has been indicated if poultry projects that they analyzed based on the financial evaluation, economic evaluation will have a greater profitability.

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