Original Contribution

AFFECTIVE FACTORS ON PERFORMANCE OF POULTRY PRODUCTION UNIT OPERATORS IN GUILAN PROVINCE, IRAN

Mohammad S. Allahyari*

Department of Agricultural Management, Rasht Branch, Islamic Azad University, Rasht, Iran

ABSTRACT

The main purpose of this study was in identifying and analyzing affective factors on efficiency and performance of poultry production units' operators' in Guilan Province, Iran, which used a descriptive design. The population of this study consisted of whole industrial poultry production enterprises of Guilan Province (N=580) and out of them, 150 operators had been selected as statistical sample through simple random sampling. The instrument used to achieve objectives of the study was a questionnaire by reliability 0.92. Findings reveal that there were meaningful direct relationship between education level, times of attending on extension-education courses, gender and operators' ability and efficiency extent of poultry production units. Results of t-test showed that membership, using automatic ventilation system and using automatic feeding system had no effect on operator's efficiency and ability of poultry units. Based on results age, education level and staff numbers of poultry units had meaningful effect on efficiency extent and operator's ability of poultry units. Results showed that using TV and radio agriculture programs were not meaningful. According to the results, it is necessary to improve the marketing and farm management skills of farm operators through extension and participation in training activities.

Key words: poultry production, management skill, farm operator, enterprise, Iran

INTRODUCTION

Efficiency and productivity at industrial units are among those subjects which are considered by managers of these units. The poultry industry is one of those important industrial units of Iran which has developed significantly in recent decades, so that its annual productions has reached to 1300,000 tons in 2007 from 4000 tons in 1971. This fast growth shows that significant capital of the country has been directed toward this industry. So, optimal use of invested capital on this environment is part of an undeniable necessity. However, the current state of this industry reflects its efficiency. One of the major problems is high and non-competitive costs so that exporting these products was not considered seriously, in spite of sufficient

capacity for exportation, namely because the final cost within the country cannot compete with international prices. However, production incentives of recent years have represented dynamism of the poultry industry for Iran but various challenges in this industry have caused it to become one of the most critical and risky. We can mention many risks which have emerged, for example: expansion of Iran poultry industry, large vastness and dispersion of the industry all over the country, diversity of products and fields of activity, low level of literacy and knowledge among producers, dynamic nature of poultry productions, dependence on imported raw materials, high fluctuation of input fees and, finally, production levels in this field. Based on annual reports, about 80,000 tons of chickens are produced at 580 active poultry enterprises in Guilan, so this province stands fifth in production rankings.

However, results show that Guilan Province produces five percent of the country's chickens but this industry in this province is faced with

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*Correspondence to: *Mohammad Sadegh Allahyari, Department of Agricultural Management, Rasht Branch, Islamic Azad University,Rasht,Iran.Email:Allahyari@iaurasht.ac.ir, Curriculum: http://allahyari.webs.com/*

great structural problems. Whilst operators of poultry enterprises have significant a role in mitigating these risks in this issue they would progress more efficiently through developing their management skills. Management as a dynamic process faces various factors and conditions. Based on this subject, current research seeks to signify and vary effective factors on poultry enterprise operators' performances and efficiencies in Guilan province.

Varying conditions of agricultural efficiency in Iran show that efficiency levels are lower than those of developed countries and also some comparative countries. Among the affecting factors of efficiency growth, exploiters' central role within agricultural productions is undeniable. Undoubtedly, efficiency growth in the agricultural sector needs to have every exploiter's knowledge and skills increased in that this issue itself requires offering training to exploiters in order to promote their efficiency toward realization of production goals (1). Efficiency is a very important factor, in the field of efficiency growth, especially for the agricultural economy of developing countries. We use the analysis of efficiency to signify facilities for increasing production whilst preserving resources, and also as a good complement for adopted policies in order to simulate inside productions; therefore, in current conditions, related studies to good efficiency and performance and recognizing affective factors on undesirable performance have very special importance (2). On the other hand, results of comparative analyses of differences between efficiency and performance among producers also is one of most important ways of recognizing weaknesses and strengths of current agriculture conditions (3).

Several researches have been done in the field of improving production efficiency of poultry enterprises that mostly deals with to this subject from a technical aspect and also the varied affect of various factors on decreasing failure rate of enterprises or performance increase.

In this field, we can find many studies which analyze poultry enterprises from management and organizational perspectives and also assessed effects of production factors set. Current research addresses this issue with this viewpoint (4). Agricultural success in future,

not only depends on features, skills and professional attitudes, but also the needs to new attitudes and skills (5). Based on previous studies, it was assumed that advanced management procedures in strategic planning, financial, marketing, cooperation and workforce management can help to decrease stress and work problems and also improve economical success of farm (6). Economical success of one farm is an important functional factor that maybe affects on physical stress, work extent and farmer's ability for working. Timonen (7)(2000) found that there is good relation between one commercial farm which was controlled well and economical success, welfare and farmer's physical comfort. This relation was emphasized by Simpson et al., too. They found that financial consideration and the feeling of tiredness are some of the main stress resources on Canadian farmers. In order to support farmers for accepting and applying new farm management practices, we need to identify some prerequisite which enables them to accept them (6).

Manivannanan and Tripathi (8), reported that family education status, herd size, input availability, market facilities, level of knowledge about improved dairy husbandry practices, economic motivation, scientific orientation, achievement motivation, self confidence and innovation proneness, positive and significant relationship with management efficiency of overall sample of respondents, irrespective of the localities. Amongst situational and personal characteristics, family education status had a positive and significant relationship with management efficiency among peri-urban respondents, whereas herd size and input availability were found to have a positive and significant relationship with management efficiency of urban dairy farmers.

The main purpose of this study was in identifying and analyzing affective factors on efficiency and performance of poultry production units' operators' in Guilan Province. The study, based on these perspectives, is framed with the following specific objectives:
Identifying poultry production operators' socio-economic features
Assessing ability extent and operators performance of Guilan aviculture enterprises.
Studying correlation between operators' socio-economic features and operators' ability.

MATERIALS AND METHODS

The present study was conducted in poultry production units of Guilan Province, Iran. The research design of the study was a descriptive study conducted with the aviculture operators of Guilan province (N=580) at 2010, in the north part of Iran. In order to determine sample size (n=155), the table for determining the sample from a given population, developed by Bartlett et al. (9) was used.

According to dispersion of poultry production units at Guilan Province, as a first step these samples from 16 counties of Guilan Province, six counties including *Roodbar, Rasht, Langrood, Talesh, Sumesara and Bandar Anzali* were selected. An attempt at choosing varied samples from east, west, north, south and center area at this selection. Also, the importance of each county at poultry production was considered.

A specific questionnaire was developed to measure proficiency and performance of management skills about poultry production units' operators. This was given to the faculty of the Department of Animal Husbandry, Islamic Azad University, Rasht Branch and also to staff experts of Agricultural Organization of Guilan Province (*Jihade-e-Keshavarzi*) to test for face validity. Then, their comments were adopted at questionnaire. The reliability of the survey instrument was tested (Cronbach's Alpha=0.92) for the entire process. Questionnaires conducted with owners and operators of Guilan poultry production units and data were collected through interview with them. In order to evaluate operator's perspective of poultry production units we used 58 statements in nine skill areas (planning and goal setting, accounting and financial management, logical marketing, finding information, logic in decision making, resource mobilization, risk taking, communicative, and technical). Six point continuum "None", "very low", "low", "mediate", "high", "very high" was used in order to measure respondent's perspective and ability rate in every area of farm management skills. Data was analyzed using descriptive and interferential statistics such as: mean score, standard deviation, analysis of variance, Friedman, t-test, coefficient of correlation, and regression analysis.

RESULTS

Social features

Table 1, shows social features variables of the study respondents. Most of the respondents in the study were male (93%, n=145) and only 10 persons (7%) were female. The ages of the respondents ranged from 24 to 64. The mean age was 42 (SD=8.4). Majority (41.8%, n=61) of respondents were 41-50 years old. Assessing education level showed that most respondents were at the level of diploma (high school) (42.2%). Also significant numbers of poultry production units' operators had academic degree (38.3%). Only four persons (2.6%) of respondents were illiterate. Results indicated that average spent years for education among respondents were 12.3 years (SD=4.1). Average of respondent's work experience at aviculture was 9.1 years (SD=5.47), but most respondents (71.6%) had work experience fewer than 10 years. Forty-one persons (26.5%) had work experience of 11 to 20 years.

According to **Table 1**, respondents attended extension-education courses at least once, on average and 40.8% of respondents attended no courses during two past years. Fifty-nine persons (38.8%) attended one or two courses and just four (2.6%) attended five courses. More than half of them said that they were members of a cooperative poultry association. About using agriculture programs, broadcast by TV and radio, 47.1% of birders sometimes use programs and 41.3% of them always watch programs. Only 18 persons (11.6%) said that they did not consider these kinds of programs.

Economic features

According to **Table 2**, average of poultry production unit staff was about four persons. So that maximum number was 12 and minimum was no staff. Average of production capacity of poultry units is 35216.02 Kg. Most production capacity was 235000 Kg and the least capacity was 5000 Kg. Average number of hatchings at samples was 13602 chicks that fluctuate between 2000–5000 chicks. Poultry production units' operators spend 12535784.04 Tomans for buying chicks. So that, most spent cost for buying food at one period was 110 million Tomans and least extent was 800,000 Tomans. Average of spent cost for healthcare was 1934184.30 Tomans. Poultry production units' operators spend 1980847.80 Tomans for labor costs. About reported hatches, acceptable extent is 4.15% and that is in accord with standard extent for this feature.

Table 1. *Frequency distribution of social features*

Social features	f	%	Valid %	Cum %	M	SD
Sex						
Male	145	92.9	93.5	93.5		
Female	10	6.4	6.5	100		
Non-response	1	0.6				
Age (year)					42	8.4
20-30	14	9	9.6	9.6		
31-40	49	31.4	33.6	43.2		
41-50	61	39.1	41.8	84.9		
51-60	19	12.2	13	97.9		
61-70	3	1.9	2.1	100		
Non-response	10	6.4				
Level of Education					12.3	4.1
Illiterate	4	2.6	2.6	2.6		
Primary school	7	4.5	4.5	7.1		
Guidance school	19	12.2	12.3	19.5		
High school	65	41.7	42.2	61.7		
College and upper	59	37.8	38.3	100		
Non-response	2	1.3				
Years of experience(year)					9.1	5.47
Up to 10	111	71.2	71.6	71.6		
11-20	41	26.3	26.5	98.1		
21-30	3	1.9	1.9	100		
Non-response	1	0.6				
Attending extension-education courses					1.37	1.47
No course	62	39.7	40.8	40.8		
1-2	59	37.8	38.8	79.6		
3-4	27	17.3	17.8	97.4		
5 and upper	4	2.6	2.6	100		
Non-response	4	2.6				
Cooperative membership						
Yes	70	44.9	45.5			
No	84	53.8	54.5			
Non-response	2	1.3				
Using agriculture programs by TV and radio						
Yes	18	11.5	11.6			
Sometimes	73	46.8	47.1			
No	64	41.0	41.3			
Non-response	1	0.6				

Table 2. *Mean and standard deviation of Economic features*

Economic features	N	M	SD
Number of staff (person)	154	4.06	1.83
Production capacity (Kg)	140	35216.92	32114.011
Number of hatchings (piece)	141	13602	11078.26
Cost of buying chick (Toman)	141	12535784.04	10152264.41
Cost of feeding (Toman)	137	31349788.32	25156490.63
Cost of healthcare (Toman)	134	1934184.30	2895407.635
Waste (%)	143	1980847.80	1676357.56

Grouping performance and ability of poultry production units' operators

In order to group operators' performance and ability of poultry production units, we used interval mean from standard deviation. In this way, their efficiency and performance was classified based on mean and SD as follow:

A= weak: A< Mean-SD
B= intermediate: Mean- SD <B< Mean

C= good: Mean< C< Mean+ SD
D= nice: Mean+ SD < D

Hence, average of efficiency was 3.67 and standard deviation calculated as 0.52 and then they grouped according to the above mentioned formula. As you see in **Table 3**, it can be seen that most respondents are placed at the range of intermediate (32.1%) and good category (33.3%).

Table 3.Ggrouping poultry production units' operators of Guilan Province base on ability and performance at farm skills managements

Level of performance and Efficiency	f	%	Cum%
Weak	27	17.3	17.3
Intermediate (fair)	50	32.1	49.4
Good	52	33.3	82.7
Nice	27	17.3	100

As reported in **Table 4**, significant reverse found between age and efficiency and performance extent of poultry production units' operators (p=0.000, r =-0.377). It means that by increasing a respondent's age, their efficiency has decreased. Also, there was meaningful direct relationship between education level and ability extent of poultry production units' operator (p=0.010, r=0.211). It means that by increasing education level, their efficiency would increase too. Results showed that there was a direct and meaningful relationship between times of attending on extension-education courses and operators' ability and efficiency extent of poultry production units (p=0.028, r=0.179). It means that operators, who have attended those programs less, have had more ability. On the other hand, no significant relationships were found between efficiency and operator's ability of poultry production units and work experience at aviculture, number of staff and performance of each production period.

Because we cannot use a Pearson correlation coefficient for assessing relationship between nominal and interval variable, a point biserial correlation was used (10). Results showed that there was a meaningful relationship between gender and ability extent of poultry production units' operators (p=0.032, r_{pb}=-0.172), but there was no relationship between ability level and cooperation membership, using TV and radio agricultural programs, using automatic ventilation system and automatic feeding system **(Table 4)**.

Table 4. Correlation coefficients between socio-economic features and level of performance

Variable	Kind of correlation coefficient	r	p
Age	Pearson	-0.377[**]	0.000
Level of education	Pearson	0.211[**]	0.010
Years of experience	Pearson	-0.081	0.319
Number of staff	Pearson	0.127	0.118
Attending extension education course	Pearson	-0.179[*]	0.028
Yield	Pearson	0.052	0.538
Sex	point biserial correlation	-0.172[*]	0.032
Cooperative membership	point biserial correlation	0.141	0.081
Using agriculture programs by TV and radio	Contingency correlation	0.173	0.574
Using automatic ventilation system	point biserial correlation	-0.152	0.060
Using automatic feeding system	point biserial correlation	-0.032	0.690

[*]p ≤0.05 [**] p ≤0.01

Analysis variance and t-test tests were used in order to assess differences between operators' efficiency extent of poultry units base economical-social features. These tests were assumed at a meaningful 0.05 level. Using a meaningful level we can determine whether yielded result was due to chance, or not. If significance level would be meaningful from a statistical view so null hypothesis would be rejected. Null hypothesis presents an indication of affect extent equals zero. Whenever null hypothesis is rejected, affect extent at equal society is not zero. Hence, effect size shows

incorrect rate of null hypothesis so that we used separate statistics in this research for accuracy in decision making for each of the statistics. Results of t-test showed that membership variable (p=0.08, t=-1.757) using automatic ventilation system (p=0.06, t=1.897) and using automatic feeding system (p=0.69, t=0.399) had no effect on operator's efficiency and ability of poultry units, from a statistical view. Delavar (10) quoting from *Kuhn* suggested the following scale in order to interpret effect size (**Table 5**):

Table 5. *Iinterpretation effect size*

Interpretation effect size	d
Low	0.2
Moderate	0.5
High	0.8

In spite of non-meaningful membership variables and using an automatic ventilation system, we can see that these variables had

intermediate effect size, while affect size of using automatic feeding system is at a very low level.

Table 6. *Rresult of t-test*

Variable	N	M	SD	t	p	Effect size
Cooperative membership				-1.757	0.08	0.285
Yes	84	3.73	0.53			
No	70	3.59	0.49			
Using automatic ventilation system				1.897	0.06	0.308
Yes	104	3.61	0.52			
No	51	3.78	0.52			
Using automatic feeding system				0.399	0.69	0.064
Yes	81	3.65	0.51			
No	74	3.69	0.54			

Based on results of **table 7,** age (p=0.000, F=5.81), education level (p=0.001, F=4.76) and staff numbers of poultry units had meaningful effect on efficiency extent and operator's ability of poultry units. Results showed that using TV and radio agriculture programs were not meaningful (p=0.354, F= 1.046).

Regression Analysis
We used step by step regression analysis in order to explain contribution of variables on predicting dependant variable. Because some of the variables under study were measured at the nominal scale and could not be used for regression analysis, dummy variables were used (11, 12). These variables were: sex, cooperative membership and using TV and radio agriculture programs. A meaningful model was produced by using step by step method: (p= 0.00, df =151, 3,

and F=11.92). Meaningful F shows desirable fitness of model and linear relation between variables. An extent of Doorbin-Watson test (1.41) represents lack of independent error between predicators. Base on this principle, extent of statistic fluctuate, between 0-4 and extents less than 1 and more than 3, are not desirable. But, a desirable product is whatever is closer to 2.0 extent of multi correlation coefficient, which at first step (entering age variable to model) is 0.368, that would increase to 0.438 by entering other variables into the model. The extent of the final model coefficient (0.191) represented 19.1% of changes at dependent variable would be explained by changes at entered variables at equation. We can a write regression equation base on extent of column B as follows:
$Y=5.00 -0.22x_1 +0.078x_2 – 0.32x_3$

Table 7. *Rresult of analysis of variance*

Variable	N	M	SD	F	p	Effect size
Age (year)				5.81[**]	0.000	0.406
20-30	14	4.11	0.47			
31-40	49	3.80	0.50			
41-50	61	3.56	0.50			
51-60	19	3.43	0.47			
61-70	3	3.30	0.62			
Level of Education				4.76[**]	0.001	0.357
Illiterate	4	3.81	0.55			
Primary school	7	3.45	0.43			
Guidance school	19	3.42	0.48			
High school	65	3.57	0.48			
College and upper	59	3.88	0.52			
Years of experience(year)				0.407	0.66	0.103
Up to 10	111	3.70	0.52			
11-20	41	62.	0.52			
21-30	3	3.52	0.40			
Attending extension-education courses				3.85[*]	0.011	0.322
No course	62	3.83	0.49			
1-2	59	3.54	0.55			
3-4	27	3.62	0.49			
5 and upper	4	3.39	0.49			
Using agriculture programs by TV and radio				1.046	0.354	0.166
Yes	18	3.64	0.50			
Sometimes	73	3.61	0.51			
No	64	3.74	0.52			

[*] $p \leq 0.05$ [**] $p \leq 0.01$

Table 8. *Rresult of regression analysis*

Variable	B	Std. Error	Beta	t	p	R^2
Constant	5.00	0.237		21.11	0.000	
Age	-0.022	0.005	-0.345	-4.62	0.000	0.135
Attending extension-education courses	0.078	0.027	-0.218	-2.91	0.004	0.170
Sex	-0.32	0.161	-0.151	-1.98	0.049	0.191

DISCUSSION AND CONCLUSION

Generally, the obtained results of this study presented that operator's ability extent of poultry units is at intermediate to good level and that 65.4% of respondents are in this range. Generally, this distribution was normal. Among features at this research, age, education level, attending on extension-education courses and sex meaningful with ability and efficiency at farm management skills.

Rasuli Azar et al. (13) also working on a research project called "affective factors on farm management skills" and supervisors' experts on wheat plan at West-Azarbaijan Province, Iran showed that, from a statistical view, there a meaningful relation between age and attending education courses and the extent of farm management skills that coordinate with the findings of this study.

Based on research results, there is a meaningful reverse relation between attending on extensional education courses and operator's ability and efficiency of poultry units that does not coordinate with Olaniyi and Akin's (14) findings. They found in one research, called "affection of extensional activity at culturing poultry at Ando city of Nigeria", that there is a meaningful relation between extensional contacts of poultry management practices. Research results showed that age has meaningful effects on operator's ability extent of poultry units so that persons with ages of less than (20-30) had most farm management skills that were not coordinate with Al-Rimawi et al. (15) because at that study, age was not identified as an affective factor on farm manager's skill. Education level also was one of independent variables that affective on operator's ability of poultry units so that managers with high

academic level had most ability and efficiency extent which coordinated with the Al-Rimawi et al. (15) findings. Attending extension-education courses was one of other affective variables on extent of efficiency that, unfortunately, the results of research represented a negative affection of this variable because those who attended less had more ability. Other variables such as cooperative membership, work experience, using TV and radio agriculture programs, using automatic ventilation system and automatic feeding system had no affection on operator's ability extent of poultry units.

Results of regression analysis showed that entered variables on equation defined just 19.15 of changes on operator's ability extent of poultry units that among these, age variable had most role and relation so that based on regression relation: results of increasing age led to decreased operator's ability of poultry units. Educational role of improving farmers' management skills was an important duty for extending governmental services (16).

Can improve farm operator's management ability, through extension education programs, significantly. They can help farmers in making better decisions and learning skills which help them to analyze their decisions and also in assessing marketing, identifying commercial chances, time programs, quality and quantity of productions in order to satisfy target market (15, 17). In order to promote commercial agriculture, producers should try to establish a simple register system but affective on farms and being under education about how to make use of farm data to organize and manage productions and marketing and by using simple financial management tools. Comprehensive consideration to farm management issues and identifying traits and their limiting factors and offering good solutions would be a creator of an agricultural revolution in producing agriculture products and optimal utilization of production factors. In the field of efficient farm management should consider these cases:

1. Production being consistent with marketing
2. Functional management skills base on arts, be taught to managers who act as farmers.
3. Agriculture affairs consulting does not begin just by using production records and performance and analyzing profitability but by using accounting and assessing of all farming resources

4. Farmers' individual entrepreneurial abilities and interests and their qualifications for cooperating with other farmers must be encouraged in order to exploit special market opportunities
5. Cooperative approaches of farm farmer school (FFS) and farmer exchange education to usual farmer be used as it is used in most developed countries
6. Affectively, information service must be improved through programs and collecting goods at a base region in order to obtain necessary economical data on farm management.

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