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AN ECONOMIC ASSESSMENT OF POULTRY EGG SECTOR IN KOSOVO

Original Research

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Abstract

This study aimed to analyze the economic statement of the poultry egg sector in Kosovo. According to the Agency for Agricultural Development (AAD), in Kosovo are registered 56 poultry egg farms, and most of them are small size farms. A sample of 21 poultry egg farms was selected, based on a systematic selection. Data were collected through a semi-structured questionnaire using a face-to-face interview with farmers in the poultry egg sector in the territory of Kosovo. The findings show that poultry egg production in Kosovo is profitable. It can be concluded that farms were cost-effective and lucrative as a result. Results show that medium-size farms (10,000 – 50,000 laying hens) had higher ROA and ROS then small size (up to 10,000 laying hens) and large size farms (more than 50,000 laying hens). However, large size farms had a higher cost-benefit ratio and net profit margin. It is recommended that farmers should improve farm buildings, make better management practices and have more control in the animal feed supply. Lastly, farmers' access to the financial market is limited and due to its importance it should be addressed by policymakers and financial institutions.

INTRODUCTION

Livestock currently contributes between 25-30% of the Agricultural GDP of developing countries and 70% of the world's rural poor depend on it as an important component of their livelihoods (MINAGRI, 2012). Egg production is considered one of the fastest-growing agricultural merchandises over the past fifty years with production growing by 350% (NFU, 2016). Asia dominates in the production of eggs with an average of 57.1% followed by America's mainland with an average of 20.6% and Europe with an average of 17.7%, Africa is ranked in the fourth place with an average of 4.2% and Oceania with an average of 0.4% (FAOSTAT, 2016). In 2011, there were produced 65 million tons of eggs per year all around the world where the largest producer was China, producing around 23,897,000 tons, accounting for around 36.7% share of global hen production, followed by the United States, India, and Mexico (CIWF, 2013). Even though China has been exporting eggs in many countries in Asia, Europe, Africa, North America, and Oceania, due to the contamination of water and quality, it exports mostly in neighboring and region countries (Wood, 2015). A study conducted by researchers at Iowa State University in 2013, showed that the egg industry has upgraded its ecological footprint in the past 50 years through enhancement of hen feed, disease control, enriched of housing systems and a reduced amount of resource usage (Xin, Ibarburu, Pelletier, & Vold, 2013). Similar research was conducted by researchers of Australian Egg Corporation Limited (2010) which demonstrates that the Australian egg industry gives the impression to have a high degree of environmental presentation compared with egg production from European studies (Wiedemann & McGahan, 2010). The poultry sector has to deal with supplementary costs regarding regulations implemented in the environment, food security and animal welfare protocols (Horne & Bondt, 2014). Saudi Arabia and many other countries of the Asia continent are considered to be the largest environmental pollutants (Gould & Mosher, 2017). European egg producers came into the year of 2018 with an affirmative micro-economic perspective, however, the demand for locally produced eggs rise by 25 percent at the retail level and 49 percent from the processing companies (Clements, 2018). According to the European Commission, the largest EU producer remains France, accounting for a 13% share of total EU production, followed by Germany contributing with 12%, and Italy and Estonia contributing with 11% of total production. On the other side, the poultry sector in Kosovo is primarily focused on egg production. It covers approximately 98% of total domestic egg consumption (MBPZHR, 2016). The average consumption per capita is 201 eggs/year (MAFRD, 2017). Currently, there is approximately 2,740,000 poultry where 74.5% of total poultry are laying hens (MAFRD, 2017). In 2016, the total egg production is estimated to be 350 million eggs (MAFRD, 2016). The quality of poultry eggs is decent, thus the egg sector has potential for expansion in the foreign market, exclusively in the regional market. Better management of feed cost and other relevant costs, better management practices, the facilitation of sales in a foreign market and further government support would drive poultry egg farmers of Kosovo to an excessive supply which logically would make farmers accessible and qualified for the foreign market. Similarly, it does not export poultry eggs at the moment. It must go through several phases and fulfill important production factors to eradicate the barriers. Moreover, Kosovo is less developed in terms of animal welfare in contrast with developed countries around the world due to the lack of regulatory framework in favor of animal protection. As EU countries have changed the raising system of poultry hens from conventional to enriched cages due to the implementation of the new legislation (European Union Council Directive 1999/74/EC) in providing well-being for hens (Horne & Bondt, 2003), in countries outside the EU you can still find poultry farms that have conventional systems. In Kosovo, the abovementioned law has not yet been implemented. The majority of farms are still using conventional cages for raising hens.

The poultry egg industry in Kosovo needs to expand the production scale, to invest in new pieces of machinery to be competitive in the regional and international market, and to offer certified eggs in compliance with EU food standards. Consequently, there is a remarkable need for research in the area of agriculture and, respectively, in the poultry industry. Kosovo needs more research to be done in this segment. A little devotion is given to the poultry egg sector from the research area and development exertions. Through this study, the author aimed to represent the actual economic position of poultry egg farms in the region of Kosovo. Similarly, to estimate the economic aspect of the poultry egg sector based on the size of poultry egg farms in the study area, identify the main problems associated with poultry egg production, and introduce the socio-economic characteristics of sampled farms in poultry egg production.

RESEARCH AND METHODS

This study concentrates on the results of the primary and secondary data. A semi-structured questionnaire is a form of a questionnaire which combines structured questions with open-ended questions to receive information about a study

where the interview can last to 45-60 minutes (Desai & Potter, 2006). Hence, the primary data of this study is generated through a semi-structured questionnaire using face-to-face interviews with farmers in poultry egg production in the territory of Kosovo, based on systematic selection. The survey method was used in data gathering. A total of 21 questionnaires are recorded with poultry egg farmers. The questionnaire consisted of three parts. The first part encompassed descriptive data of the farm with open-ended questions to get more general descriptive information about sampled egg farms. The second part is focused on the main product, the processes, and the resources needed for egg production. Similarly, to measure the profitability, the data from farm's accounting is required; data like inputs used (source and their cost), the output generated (quantity and selling price), governmental support, cost distribution, and labor costs. In the third part egg, farmers were asked about the challenges and limitations they are facing, and also their short and long term objectives The interviews were conducted in January 2018. The results of the study were determined by using descriptive statistics, costs, profits, profitability ratios and identifying the major egg farming problems based on the frequency of farmer responses. The profitability of the egg producers was determined. The profitability ratio was evaluated through return on assets, return on sales formula, cost-benefit ratio, gross profit margin, and net profit margin. ROA is evaluated by dividing the net income with total assets:

$$Return\ on\ Assets = \frac{Net\ Income}{Total\ Assets}$$

ROS is evaluated by dividing the net income with total revenues:

$$Return\ on\ Sales = \frac{Net\ Income}{Total\ Revenues}$$

Net profit margin is calculated by dividing the net profit with revenues and then multiplying by 100:

$$Net\ Profit\ Margin = \frac{Net\ Profit}{Revenues}\ x\ 100$$

Meanwhile, the cost-benefit ratio was evaluated by dividing the net income with total expenses:

$$Cost\ Benefit\ Ratio = \frac{Net\ Income}{Total\ Expenses}$$

For data analysis, Microsoft Office Excel Software Package 2016 and IBM SPSS Statistics 23 were used.

RESULTS AND DISCUSSION

Descriptive statistics

To provide an expressive statement of the poultry egg farms in the study, a descriptive statistic was conducted. It is used to interpret the data and analyze the main features of the poultry egg farms in the study area, respectively in the region of Kosovo.

In every farm the authors visited, women have been supporters of their husbands and have contributed equally to farm management (Table 1). The majority of farmers are under 40 years old. The minimum age of the farmers is 24 and the maximum age of farmers is 59 years (Table 2). From the total number of interviewed farmers, the average of farmers is 43 years. Likewise, there are no illiterate farmers (Table 3). In developing countries, the biggest deficiency in farmers is school qualification, while none of the farmers in Kosovo is illiterate. This shows a positive standpoint that helps farmers to read and get more information about their sector.

From the total number of the interviewed farms, 57% or 12 farms are small size and have between 1,200-10,000 hens, 38% or eight farms are medium size and have between 10,000-50,000 hens and 5% or one farm is a large size and has over 50,000 hens (Table 4). The majority of farms in the study area are of small scale. The minimum number of hens for a small size farm is 2,000 and the maximum number of hens is 10,000. The minimum number of hens for a medium-size farm is 10,050 and the maximum number of hens is 40,000 whereas the minimum number of hens for a large size farm is 50,000 and the maximum number is 150,000. From the total number of interviewed farms, the mean number of hens for a small size farm is 6,425 hens, 19,131 hens for a medium-sized farm and 150,000 hens for a large size farm.

Moreover, there was no significant difference in the hen diet used by farmers (Table 5). From the total number of farms interviewed, on average 61% of the diet consists of corn, 20% consists of soy, 8% consists of sunflower, 7% consists of minerals and the other part consists of premix and oil. The amount of food recipe depends on the number of total hens in a poultry egg farm. In general, a hen consumes 120-125 gr of food concentrate per day. Diet is measured in kg/day ranging from 250 kg/day to 18,000kg/day. On average, a small size farm spends 736kg of food concentrates per day, a medium-size farm spends 2295 kg of food concentrates per day whereas a large farm size spends 18,000 kg of food concentrates per day.

From the total number of interviewed farmers, only two farmers cultivate corn and wheat as a source of food for laying hens while the other farmers buy the needed ingredients and process it. The food preparations are associated with a high cost which results in approximately 2-3% of food losses, the farmer responded. Likewise, 19% or four farms do not use a mixer but they buy the prepared food whereas 81% or 17 farms own the mixer through which they process the ingredients and serve the

food to the laying hens. The prepared food is stored in the warehouse and is kept no more than two weeks.

Profitability ratios

To estimate the profitability ratios of the poultry egg farms in the study area; return on assets, return on sales, cost-benefit ratio, and net profit margin were taken. In this case, the authors aimed to measure the profitability of three different farm sizes.

Based on the results, a small egg farm size for every euro that invested in assets during the year of 2017 generated 6.9% of net income, a medium egg farm size generated 8.9% of net income and a large farm size generated 4.8% of net income. ROS ratio was estimated to measure the profitability of the egg farms in the study area. The ROS are also accepted as net profit margins. Consistently, a small egg farm size received 9.6% operating profit from the total revenues, a medium egg farm size received 34.5% operating profit from the total revenues and a large egg farm size received 16.1% operating profit from the total revenues (Table 6). Consequently, a medium egg farm size turns out to be the most profitable among the three farm sizes. Based on the results, the large size egg farms have a stronger net profit margin accounting for 16% (Table 7).

Similarly, a cost-benefit ratio is a valuable tool presented in economics to evaluate projected and enlargement projects and accounts for the economy as a whole compared to other analyses that are concerned in individual persons (Quah & Toh, 2012) and, equally, a very beneficial tool to evaluate the profitability of a certain product. In the authors' findings, a small size farm received €0.13 from the euro invested in egg production, a medium-size farm received €0.15, and a large size farm received €0.21 (Table 8). As a result, large sampled farms have a better cost-benefit ratio among the three sampled egg farms, meaning that it obtained €0.21 for every euro invested.

The main problems connected with egg production in Kosovo

Poultry egg producers in Kosovo are facing various challenges throughout the year. Farmers have mentioned the major problems they are most challenged with which they have ranked based on the high importance (Table 9). These obstacles are having a huge impact on the production scale, thus affecting the profit maximization.

During the year there may be fluctuations in selling prices when in the summer prices can decrease to a low price which can affect the farmer's revenues whereas the winter is their lucrative and productive season due to the increased selling prices in the market. As a consequence, most of the time they do not feel confident in expanding the farm capacity. During the summer, there is an increased price of inputs that occurs due to increased demand for eggs in the market, resulting in high feed costs. Import from region countries, respectively from Albania in harming the selling price in the market. Likewise, the majority of poultry egg farms are located in the rural areas of Kosovo; thus they are attacked by the shortage of electricity problems which sometimes can last two-three hours per day. The financial situation is imposing farmers' stay with low scale production, old machinery, deprived of isolation and other related prerequisites.

Moreover, most of the sampled farms were not isolated. Isolation of the farm is an important factor for the quality of eggs and the welfare of the hens and resulted in a high cost of electricity. Kosovo has a continental climate. During the summer the weather is associated with high temperatures and the climate inside the farm can create a sweltering environment to the hens. Along these lines, it will affect the quality, quantity, physical and emotional states of hens. On the other hand, winter is characterized by low temperatures and the usage of electricity is mandatory. For the farmers to provide adequate welfare to the laying hens, quality egg to the market and low cost to their business, isolation of the farm is essential.

CONCLUSIONS

In this study, the authors evaluated the economic statement of the poultry egg sector in Kosovo, where they compared three different egg farm sizes: small, medium and large. The study showed that poultry egg production is profitable. Likewise, the egg sector is very dynamic and promising, thus it has a huge potential in expanding in the regional market and providing high-quality eggs. After the cost and returns measurements, it can be concluded that farms were cost-effective and lucrative as a result. On the other hand, large farm sizes had a stronger gross profit margin and net profit margin compared with the other sampled farms. From the total sampled farmers, there was only one female farmer and others were male farmers, the majority of which were under the age of 40, associated with high school level and with approximately 17 years of farm experience, thus none of the sampled farmers was illiterate. Moreover, 57% of sampled farms were small size, 28% of sampled farms were medium-sized and only 5% or one farm sampled farm was large having more than 50,000 laying hens.

Farmers engaged in egg production were not satisfied with market prices as they ranked as the first major problem in the operating profit of their business, thus resulted in a higher percentage than the other problems associated with the sampled farms. Due to financial issues, they are imposed to

stay with low scale production, old machinery, deprived of isolation and other related prerequisites.

Based on the results, the following recommendations are proposed:

· *Improvements of poultry farm buildings:* During the farm visits, it has been observed that the majority of farms were objects like old houses modified and turned into farm buildings. They did not have the structure of a proper egg farm, and lack of proper ventilation and isolation, as well. Together with buildings, equipment was also relatively old, thus resulting in a higher overall cost of maintaining. Hence, it is recommended to increase investments in building a proper house system equipped with needed egg farm essentials. This way of raising hens results in a high cost due to the high energy intake. Due to the continuous support they have from the government through subsidies and grants, it is recommended to make such changes which will have a positive impact on their output as a result.

· *Food supply management:* From the all sampled egg farms, the majority of them buy the needed ingredients to prepare the diet, whilst only a few of them produce cereals such as corn and wheat used for hens feed. According to the results, feed cost dominates in the total cost. Moreover, the rent per ha without an irrigation system, in Kosovo, is approximately €100. Thus, to decrease the feed cost, be more independent and have more control in the supply chain, it is recommended for these farms to orient also in the production of animals feed, whereas for those who are currently engaged in feed production, to expand the production scale.

· *Low-interest loans*: High-interest loan rates conquer in Kosovo. Thus, most farmers do not feel prepared or eligible to take loans for purchasing any equipment, renovation or expansion of the farm capacity. Hence, it is recommended to lower the interest rate with a longer grace period for serious farmers, and facilitate the loan criteria to allow them to implement their short-term plans, respectively increase the production or invest in machinery and modernization for a shorter time.

· Better management practices: None of the sampled farmers was illiterate. Hence, it is recommended that farms be attentive, cautious and read more from online sources to be well informed with the latest practices applied by farms worldwide. Consequently, because most of the sampled farms are small scale, they do not feel the need for having an accountant as an additional cost. Consistently, they do not take notes on costs and returns and do not know how to calculate the production cost. As a result, lack of financial management of their farm can lead them to more losses than profits. Therefore, it is recommended to provide training on financial statement management for farmers to be aware of the importance of money management to achieve better outcomes.

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Table 1
Allocation of the farmers according to their gender

Gender	No.	Percentage
Male	20	95%
Female	1	5%
Total	21	100%

Source: Field survey, 2018

Table 2
Allocation of the farmers according to their age

Age	No.	Percentage
24-40	9	42%
40-50	6	29%
More than 50 years	6	29%
Total	21	100%

Source: Field survey, 2018

Table 3
Allocation of farmers according to their education level

Education Level	No.	Percentage
Primary School	1	5%
High School	14	67%
Bachelor level	4	19%
Master level	2	9%
Total	21	100%

Source: Field survey, 2018

Table 4
Farm Size/Capacity of egg farms in the study area

	No.	Percentage	Mean	Max	Min
Small (1,200-10,000)	12	57%	6,425	10,000	2,000
Medium (10,000-50,000)	8	38%	19,131	40,000	10,050
Large (over 50,000)	1	5%	150,000	150,000	50,000
Total	21	100%			

Source: Field survey, 2018

Table 5
The diet of raising hens of the egg farms in the study area

No. of farms	Corn	Soy	Sunflower	Oil	Minerals	Premix	kg/day
1	62%	20%	7.5%	1.5%	8%	1.25%	840
2	62%	18.5%	8.3%	0.1%	10%	1.5%	487
3	60%	20.5%	8.7%	1%	9%	1.3%	399
4	61%	18%	8%	1.5%	9.50%	2%	875
5	62%	20%	6%	1%	10%	1%	2136
6	60%	20%	8%	1%	9%	1.6%	1080
7	60%	19%	9%	2%	1%	9%	2490
8	63%	19%	6%	1%	10%	1%	1575
9	59%	20%	9%	2%	9%	1%	1012
10	61%	20%	7%	1%	2%	9%	1308
11	59%	20%	10%	1%	9%	1%	600
12	60%	22%	8%	2%	7%	1%	18,000
13	60%	20%	9%	1%	9%	1%	300
14	61%	19%	8%	1%	9%	2%	1200
15	62%	20%	7%	2%	2%	7%	1800
16	60%	20%	8.8%	0.2%	10%	1%	250
17	63%	20%	7%	2%	2%	6%	4800
18	61%	19%	8%	1%	9%	2%	1200
19	60%	22%	7%	1%	9%	1%	1000
20	62%	22%	10%	2%	2%	2%	500
21	60%	22%	8%	1%	7%	2%	880

Source: Field survey, 2018

Table 6
Measurement of the profitability ratios of the egg farms in the study area

	ROA	ROS
Small	6.9%	9.6%
Medium	8.9%	34.5%
Large	4.8%	16.1%

Source: Field survey, 2018

Table 7
Net Profit Margin of the egg farms in the study area

	Net Profit	Revenues	Net Profit Margin
Small	€11,827	€123,789	10%
Medium	€42,752	€372,134	11%
Large	€631,737	€3,929400	16%

Source: Field Survey, 2018

Table 8
Measurement of Cost Benefit ratio of the egg farms in the study area

Farm Size	Net Income	Total Expenses	Cost benefit ratio
Small	€15,040	€111,962	1:0,13
Medium	€50,405	€329,382	1:0,15
Large	€691,737	€3,297,663	1:0,21

Source: Field survey, 2018

Table 9
Identification of the main problems of the egg farms in the study area

Main problems	Rank Order	Frequency	Percentage (%)
Price volatility in the market	1	9	43%
High Feed Cost	2	4	19%
Import	3	3	14%
Shortage of Electricity	4	2	10%
Financial problems	5	2	9%
Lack isolation of the farm	6	1	5%
Total		21	100%

Source: Field survey, 2018