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PERCEPTION OF THE BEEKEEPERS REGARDING THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT IN THE NORTH-EASTERN REGION OF ROMANIA

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Abstract

The aim of the presented research consisted in determining the beekeepers' behavior related to the sustainable development values and principles, based on the assessment of their acceptance level, as well as through the determination of the impact upon the apiaries' economic performances, as a result of following them. The field research occurred by questionnaires applied during the last trimester of the year 2018, on a sample of 114 subjects. The gross profit of the studied population was about 0.9 thousand euro, the profit rate 12.0%, the capital productivity 0.34 % and the net income -0.9 thousand euro. The stated believes of beekeepers regarding the sustainable development have been favourable with an average score of 4.2 on a Likert scale from 1 to 7. Solid but negative correlations have been recorded between the gross profit of apiaries and the beekeeper attitude to equality, respect for nature and shared responsibility, with values of Pearson coefficient of: -0.84, -0.92 and -.84, respectively. These results reflect the necessity to strength the sustainable development values within the beekeeping from the studied area.

Key words**:** *beekeepers' behaviour, sustainable development, economic performance*

INTRODUCTION

The economic theory, as a matter of principle, may lead to understand the dynamic and dialectic interdependence characteristic to the moral dimension and the economic conduct [3]. The neo-classical company is perceived as the entity where the production occurs as efficiently as possible, within the limits of the faced objective constraints [19], [20].
The conventional neo-classical theory is based on the hypothesis regarding the selfish conduct of the companies, which determines lower unit costs and higher profits than in the case of the companies taking ethically-based decisions. The conventional wisdom leads to the belief that the altruistic or ethical companies can not survive on a competitive market where there is no effective demand for products obtained within processes based on the equity principles [10]. The final consumers may be shaped as rational utility maximizers, they optimize the future consumption and they are consistent with this consumption behaviour. Thus, the consumer utility may be maximized as far as the ethical or altruistic behaviour is concerned [6].
In time, two ways leading to the achievement of a fair production in competitive conditions have been highlighted. The first consists in the mitigation of the unitary consumption by increasing the productive capacity and by implementing a specific model of human resources management. The second way implies the access to the technological progress, which leads to the improvement of the production function in the case of the firm engaging an ethical behavior [3]. In some cases, the salary-related costs are diminished by the social responsibility that may be capitalised as a motivational factor for certain activities. Thus is highlighted another pattern to approach the economy, in which case the labour force is ensured by the orientation of a part of society towards ethical motivations. This phenomenon seems to be specific for the

industry branches [12]. Also, it is imperative the issuing of some new methods to determine the environmental costs, which are meant to overlap with an integrated approach on environment protection and to lead to ensuring the performance/efficency of sustainable economic activities [14].

The beekeeping is recognised as an activity with a significant impact on the environment where it occurs [1], [5], as well as on the life quality in the rural area [14], [15]. Still, to maximize the agricultural production in order to increase the profit might have negative implications upon the natural and social environment [11]. In the same time, using more intensive farming practices in Romanian agriculture, determines the increased vulnerability of bees and apiaries [13].

The Romanian beekeeping is characterized by a number of 1.45 million of bee-families owned in the year 2017 by 42,864 beekeepers. The total honey production recorded in the year 2017 reached about 24,611 tones per year, with a mean of 22,781 tones per year during the period 2008-2017. The average number of bee families per apiary in the year 2017 was about 33.8 hives, with a production of 558 kg honey per apiary and an average honey production of 25.3 kg per hive. The honey is the main product harvested by the beekeepers and its selling is mainly made directly to the final consumers, on the agri-food markets and sometimes to the units specialised in honey acquisition and processing. The average honey consumption in Romania in the period 2008-2017 reached about 0.62 kg/person/year [22].

The apiary management is mostly stationary (84%), the other beekeepers move to some zones with a higher potential for the honey production than the zones from where they do come from [21]. These beekeepers use means of transport or their own vehicles. The applied beekeeping management includes verified traditional elements, sometimes outdated, associated with modern technologies used mostly accordingly [16].

The degree of apiary endowment grew up in most cases due to the accession of European funds. The beekeepers use wooden hives, manual centrifuge machine (in generally) and other relatively rudimentary equipment [16].

The efficiency of using production factors has a prominent place within the efforts towards the accomplishment of a sustainable agricultural development [2], [4], [7], [8], [17]. This shift is, in the same time, favourable for environment protection, as well as for identifying the economically efficient systems [9].

MATERIALS AND METHODS

The hereby presented research studies started from the hypothesis: "The economic efficiency of apiaries is determined by the beekeeper believes regarding the sustainable development". This means that the economic efficiency is correlated with the degree of recognizing and following the sustainable development values by the beekeepers from the North-Eastern Region of Romania. The first step consisted in establishing the beekeeper believes concerning the sustainable development. The second step was represented by the identification of the correlation between the answers regarding the sustainable development values and the main economic indicators of apiaries. Finally have been drawn up statements confirming some of the actual theories on the possibility to ensure the competitiveness of the economic units that follow the ethical values on which the sustainable development is founded.

Therefore, the research aimed to establish the beekeeper behaviour in the light of sustainable development. This purpose determined two objectives: 1. to assess the acceptance level of sustainable development values; 2. to establish the impact of following the sustainable development values upon the economic efficiency of apiaries.

The field research was carried out by questionnaires applied in the last term of the year 2018, with questions regarding the apiary consumption and results recorded in the year 2018 on a sample of 114 beekeepers from the North-Eastern Region of Romania. The sample has been realised through Neyman method, with 5% criterion of deviation and 95% level of trust.

The statistical data processing was realised with IT-applications as MS Excel, SPSS (Kolmogorov-Smirnov test, T-test, Pearson correlation), and to the field information have been added date received from the North-East Regional Directorate of Statistics and the Beekeepers Association.

The analysis of consumption and economic results was carried out by using indicators as: number of bee families, total production, average price, consumptions concerning the financial capital and workforce, value of different services and products acquisitions from third parties. Based on these indicators have been determined: total income, total expenses, net income (without the value of the own consumed resources), net income with respect to total consumptions, capital productivity and labour productivity [21].

The beekeepers received a questionnaire structured on twenty statements based on the fundamental values of sustainable development. The questionnaire used the Likert scale with grades from 1 to 7: 1 – Very false; 2 – Not true; 3 – To some extent false; 4 – Neutral 5 – To some extent true 6 - True; 7 – Very true [18].

Freedom considerations construct: Q1 - "In some instances, parents should take into consideration the probability that they and their descendants may face the circumstances when they are feeling hungry" / "All parents have the right to expect that they and their children will be raised free from hunger"; Q2 - "Sometimes the threat of violence is necessary to achieve social good" / "All people have the absolute right to live their lives free from the fear of any violence"; Q3 - "In some instances, people deserve lower levels of justice" / "The highest level of justice should be available for all people at all times";

Equality considerations construct: Q4 - "People who contributed the most to economic development deserve greater access to its benefits" / "People must have equal access to the benefits generated by development regardless of whether they contributed to that development or not"; Q5 - "The nations that foster economic development the most deserve greater access to its benefits" / "All nations must have equal access to benefits from economic development"; Q6 - "Those citizens most responsible for economic prosperity should receive more of the resulting benefits" / "The benefits of global economy should be shared equally among all nations";

Solidarity considerations construct: Q7 - "If we earn our benefits then it is not necessary to give others some of our gains" / "Those who benefit the most must help provide for those who benefit the least"; Q8 - "Just because one faces few burdens from global change does not mean that they must give assistance to those who are more burdened" / "Those who bear a substantial burden from global changes should receive assistance from those who are less burdened"; Q9 - "We must first address the suffering of our own before helping others with their suffering" / "Those who suffer the most deserve help from those who suffer the least";

Tolerance considerations construct: Q10 - "There are some people's beliefs that do not deserve respect" / "All human beings must respect the diversity of beliefs across all people"; Q11 - "Peace within societies invariably begins with promoting the society's traditional way of life" / "Peace within societies invariably begins with openness toward others' ways of life"; Q12 - "In some cases, it becomes necessary to repress differences across societies" / "People must not repress any differences across societies";

Respect for nature construct: Q13 - "Sometimes some natural resources need to be sacrificed for important developments" / "All precautions must be taken to protect natural resources in our development efforts"; Q14 - "Current patterns of production only require minor adjustments to protect the welfare of the natural environment" / "Current patterns of production must be substantially changed to protect the welfare of the natural environment"; Q15 - "People need only make minor changes to their current consumption out of respect for nature" / "People must make major changes to their current consumption out of respect for nature"; Q16 - "To a certain extent, the natural environment will look after itself to the benefit of future generations" / "It

is the obligation of a society to vigorously protect the natural environment for the benefit of future generations";

Shared responsibility construct: Q17 - "We are responsible for assuring that people within our society have their rights for freedom maintained but we are not responsible for these rights for people in other societies" / "We are all responsible for assuring that all people's rights to freedom are maintained"; Q18 - "A civilized nation must accept responsibility for improving the welfare of its less fortunate citizens but is not responsible for the welfare of another nation's citizens" / "Civilized nations must accept responsibility for improving the welfare of less fortunate individuals around the world"; Q19 -"We are responsible when members of our immediate society do not tolerate cultural differences but are not responsible for the behaviour of members of distant societies" / "We all share responsibility when members of our global society do not tolerate cultural differences"; Q20 - "Each civilized nation should focus on ending injustices in their own borders and not influence other nations in their efforts" / "It is the moral obligation of civilized nations to work together to end global injustices". [18]

RESULTS AND DISCUSSIONS

The economic results determined on the sample level have indicated the following values: total capital: 10.5 thousand euro; own resources: 1.9 thousand euro; total income: 36.7 thousand euro; total expenses: 35.8 thousand euro; gross profit: 0.9 thousand euro; number of employees: 1.3 persons; profit rate: 12.0%; capital productivity: 0.34 %; labour productivity: 30.3 thousand euro/person; net income: -0.9 thousand euro.

The beekeepers' answers regarding the sustainable development ranged from neutral to favourable (average score 4.2) (Table 1).

Table 1. Beekeeper answers in value groups

Question group	Value
Freedom considerations construct	4.6
Equality considerations construct	3.8
Solidarity considerations construct	3.7
Tolerance considerations construct	4.4
Respect for nature construct	5.7
Shared responsibility construct	3.3

Source: Own calculation.

Freedom considerations construct: The answers of the questioned subjects had the following average values: Q1 – 2.2; Q2 – 5.1; Q3 – 6.4. It pointed out the fact that the majority of beekeepers consider that, in some cases, the parent should understand that it might be possible the case when they and their families have to feel hungry, and, by the other hand, they consider that all peoples should have access in any moment to the highest level of justice. Here appears the fingerprint of the Romanian people's history, marked by vicissitudes, and for this reason the subjects expect the future to be not significantly different. In the same time, it is obvious the imperative need to ensure an equal justice for all citizens.

Equality considerations construct: Q4 – 2.1; Q5 – 3.3; Q6 – 6.1. The subjects consider, in generally, that the peoples who contributed mostly to the economic development deserve to have a wider access to its benefits, but, in the same time, all the economic benefits obtained globally should be equally divided among the nations of the world.

Solidarity considerations construct: Q7 – 4.3; Q8 - 3.6; Q9 - 3.1. In generally, the subjects' attitude is proven to be relatively neutral with respect to the solidarities values, as well as to tolerance - tolerance considerations construct: Q10 – 4.2; Q11 – 4.1; Q12-4.9.

Respect for nature construct: Q13-5.2; Q14 - 6.1; Q15 – 5.4; Q16 – 6.2. The subjects are convinced that it is an urgent need to adjust the current production technologies to the requirements imposed by the natural environment protection, for the benefit of the next generations, and the responsibility of fulfilling this objective belongs to the whole society. This attitude is determined, probably, by the specific character of beekeeping that is significantly influenced by the quality of natural environment.

Shared responsibility construct: Q17-3.1; Q18 – 2.5; Q19 - 3.1; Q20 - 4.4. This reflects that the beekeepers consider that a civilized country should take up the responsibility for fostering and increasing the economic and social wellbeing of their disadvantaged citizens, as well as for ensuring the right to freedom and tolerance related to their

members. In the same time, a civilized country can not be responsible for the prosperity or poverty of another nation, and its citizens are not responsible for the persons belonging to other societies.

Regarding the impact of the beekeepers believes upon the economic results obtained in their own apiaries, correlations among all answers and all indicators have been made, but their level was not significant, except those few proved to be important.

Between the profit rate and the answers to the questions from the group "Freedom considerations construct", it was identified a poor negative correlation (Pearson coefficient -0.58) that might be justified by the legacies from the communist period in the beekeepers attitude, in which case an authority-based management is considered efficient (Table 2).

Table 2. Correlation between the profit rate and the answers to the questions from the group *Freedom considerations construct*

		Freedom considerations construct	Profit rate
Freedom considerations construct	Pearson Correl.	1	-.58**
	Sig. (2 tailed)		.000
	Sum of Squares & Cross-products	368.55	-3291.61
	Covar.	3.26	-29.13
	N.	114	114
Profit rate	Pearson Correl.	-.58**	1
	Sig. (2 tailed)	.000	
	Sum of Squares & Cross-products	-3291.61	88041.1
	Covar.	-29.13	779.1
	N.	114	114

** Correl. is significant at the 0.01 level (2-tailed)

Source: Own calculation.

The correlation between the net income and the answers to the questions from the group "Freedom considerations construct" was very poor and negative of about -.43, statistically ensured for a level of 1.0% (Table 3).

Table 3. Correlation between the net income and the answers to the questions from the group *Freedom considerations construct*

		Freedom considerations construct	Net income
Freedom considerations construct	Pearson Correl.	1	-.43**
	Sig. (2 tailed)		.000
	Sum of Squares & Cross-products	368.55	-275.50
	Covar.	3.261	-2.40
	N.	114	114
Net income	Pearson Correl.	-.43**	1
	Sig. (2 tailed)	.000	
	Sum of Squares & Cross-products	-275.50	1099.36
	Covar.	-2.40	9.73
	N.	114	114

** Correl. is significant at 0.01 level (2-tailed).

Source: Own calculation.

We justify this correlation through the fact that the majority of beekeepers who are owning small in size apiaries, in order to obtain additional incomes, use own labour force and own capital, but the apiaries do not ensure a market value related rewarding.

A solid correlation was obtained between the gross profit and the answers to the questions concerning equality (Pearson coefficient -0.84), showing that the beekeepers who have a favourable attitude to equality ensurance do not obtain a significant gross profit (Table 4).

Table 4. Correlation between the gross profit and the answers to the questions from the group *Equality considerations construct*

		Equality considerations construct	Gross profit
Equality considerations construct	Pearson Correl.	1	-.84**
	Sig. (2 tailed)		.000
	Sum of Squares & Cross-products	340.05	-241.30
	Covar.	3.01	-2.136
	N.	114	114
Gross profit	Pearson Correl.	-.84**	1
	Sig. (2 tailed)	.000	
	Sum of Squares & Cross-products	-241.30	240.65
	Covar.	-2.14	2.10
	N.	114	114

** Correl. is significant at the 0.01 level (2-tailed).

Source: Own calculation.

Also, a solid correlation was obtained between the gross profit and the answers to the questions regarding the environment protection (Pearson coefficient -0.92). Despite the fact that the beekeepers answers prove that they respect the environment, those beekeepers having beliefs against this green value register the highest gross profits (Table 5). These results raise questions concerning the technology and the applied management and might represent the objective of a future research.

Table 5. Correlation between the gross profit and the answers to the questions from the group *Respect for nature construct*

		Respect for nature construct	Gross profit
Respect for nature construct	Pearson Correl.	1	-.92**
	Sig. (2 tailed)		.000
	Sum of Squares & Cross-products	300.20	-293.01
	Covar.	2.65	-2.6
	N.	114	114
Gross profit	Pearson Correl.	-.92**	1
	Sig. (2 tailed)	.000	
	Sum of Squares & Cross-products	-293.000	340.05
	Covar.	-2.6	3.01
	N.	114	114

** Correl. is significant at the 0.01 level (2-tailed).

Source: Own calculation.

Regarding the shared collective responsibility, the inverse correlation of -.84 with the gross profit indicates a superior level of profitability at the beekeepers that do not follow believes supporting the shared responsibility (Table 6).

We consider that the relatively reduced size and depth of our research had not allowed to show the positive relations between the sustainable development values and the economic results of beekeepers.

Table 6. Correlation between the gross profit and the answers to the questions from the group *Shared responsibility construct*

		Shared responsibility construct	Gross profit
Shared responsibility construct	Pearson Correl.	1	-.84**
	Sig. (2 tailed)		.000
	Sum of Squares & Cross-products	270.3	-255.19
	Covar.	2.4	-2.258
	N.	114	114
Gross profit	Pearson Correl.	-.84**	1
	Sig. (2 tailed)	.000	
	Sum of Squares & Cross-products	-255.2	340.1
	Covar.	-2.26	3.01
	N.	114	114

** Correl. is significant at the 0.01 level (2-tailed).
Source: Own calculation.

Otherwise, the displayed values might be considered as worrying for sustainable development of beekeeping in the North-Eastern Region of Romania.

CONCLUSIONS

The gross profit of the studied population reached 0.9 thousand euro, the profit rate 12.0%, the capital productivity 0.34 % and the net income -0.9 thousand euro.
The stated believes of beekeepers regarding the sustainable development were neutral towards favourable, with an average score of 4.2 on a scale from 1 to 7.
Solid but negative correlations have been recorded between the gross profit of apiaries and the beekeepers attitude with regard to equality, respect for nature and shared responsibility with values of the Pearson coefficient of -0.84, -0.92 and -.84, respectively.

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