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Assessment of the Relative Importance of the Governance Sustainability Principles in Bulgarian Farms

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Abstract

The present study assesses the relative importance of the principles of governance sustainability in Bulgarian farms. Based on the principles of governance sustainability, the alternatives for the application of the multicriteria analysis (AHP method) are derived. According to the obtained results for the stakeholders, „Working market environment and good private practices" is the leading alternative with 61.9%. „Good legislation" is also important with 19.8%, followed by the alternative „Democracy of governance" with 18.4%. The results of the assessment according to the prevailing criteria pose many questions about the uncertainty and mistrust in the institutional environment presented by the legislative power and the democratic governance in Bulgaria

Keywords: governance sustainability, farms, AHP method, Bulgaria

JEL: O13, Q01, Q12

Introduction

A limited number of publications are available in the scientific literature to propose a theoretical framework and methodological approach for sustainability assessment. The present study assesses the relative importance of principles for assessing farm governance sustainability, as the fourth pillar of sustainability. At the same time, it has been observed that there is a large discrepancy between the empirical and theoretical literature concerning the assessment of institutional challenges (Frantz and Instefjord, 2009). According to Tirole (2001), the theoretical literature uses as evaluation criteria a certain value or well-being. Unlike the theoretical literature, the empirical literature uses different variables in addition to changes in market values. In this regard, governance sustainability (Bachev, 2016a, 2016b, 2016c, 2016d; Bachev et al., 2021; Abdulla et al., 2022; Kiforenko, 2022). in agriculture should be synchronized with forward-looking integrative public policies with clearly defined objectives (Arabska, 2020; Bachev, 2021; Dimitrova and Ivanova, 2018; Kolaj, et al., 2023; Kalchev, 2016 a,

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2016 б, 2021; Ivanov et al., 2009; Ivanov, et al. 2012; Ivanova. and Dimitrova, 2018; Ivanova, 2021 a, 2021 b; Yovchevska, 2021; Osmani, et al, 2022; Yarkov et al., 2022). etc.). The policies must contribute to public benefits, in constant balance with sectoral (industry) and business (farm) interests (Atanasov et al. 2020).. Naturally, the rapidly changing external (ecological, environmental, institutional) environment requires a thorough understanding and knowledge of the role of governing bodies, both individually and collectively, in the sustainability of their organization. Accordingly, it is recommended that both organizational and individual level risks to be managed in a sustainable manner and play their role in creating and maintaining a viable organization that meets the expectations and requirements of all stakeholders. Bank financing and credits are also very important and financial institutions can play significant role in application of the sustainability principles as a stakeholder (Dimitrova, 2021a; 2021b).

The present study applies an approach to assessing sustainability in agriculture, incorporating the governance pillar as the fourth pillar of sustainability. As a starting point, „purely“ macro indicators are taken, such as government policies, legislation, governance democracy, harmonization, and the effect of the Common Agricultural Policy (CAP) in Bulgaria. After that, on the basis of an adapted AHP method, an attempt is made to „overflow“ them and „step“ on the micro level - farm level. In this regard, the challenge is accepted to know to what extent it is appropriate to apply this “new” (governance) pillar for assessing agrarian sustainability at the farm level. Additionally, the question arises: What is the influence of the management pillar on the overall sustainability of agricultural holdings in Bulgaria at the micro level?

The purpose of the study is to assess the relative importance of the principles of governance sustainability in Bulgarian farms.

Material and Methods

An adapted Analytic Hierarchy Process (AHP) model is applied to fulfill the objective of assessing the relative importance of governance sustainability principles in agricultural holdings. AHP is part of a multi-criteria approach constructed for information synthesis, especially when the problem is related to social elements, subjective opinions (Saaty, 1980, 2001; Saaty and Vargas, 2006; Aczel and Saaty, 1983; De Felice and Petrillo, 2013; 2014, etc.). Its main advantages are related to the reliability of the obtained results when weighing different alternatives according to a set of criteria. Analytical hierarchy process is widely used to evaluate economic management models, for example, alternative business models and their components. It is also common to use the case study method to study business models and to use AHP evaluation of model components.

For the evaluation of the relative importance of the principles of governance sustainability (Table 1), the following alternatives and criteria are adopted (Sarov et al., 2017)[1]:

[1] Report of the 1st stage of the Project „Sustainability of Agriculture in Bulgaria“ (2017-2018), IAE-AA, headed by Prof. Dr. Hrabrin Bachev, page 52.

Table 1. Indicators for evaluating the level of governance sustainability in Bulgaria

Principles (PR)	Criteria	Indicators
PR.1. Good legislation	1. Harmonization of EU policy	1. Degree of harmonization of policies
	2. Implementation of EU policies	1. Degree of implementation of policies
		2. Degree of implementation compared to the planned
	3. Satisfaction with the policies of EU from the beneficiaries	1. Degree of satisfaction with the policies of EU from the beneficiaries
	4. Effects of policies	1. *K* of allocation of subsidies under the 1st pillar CAP
		2. K distribution of investment support to the sector in relation to the share of BDS
PR.2. Democracy of governance	1. Representation	1. The proportion of producers, with institutional representation
	2. Transparency	1. Level of awareness
	3. Impact	1. Share the general support for BDS in agriculture
	4. Stakeholder participation in the decision-making process	1. *K* of real weight in the process
PR.3. Working agrarian administration	1. Minimal usage costs	1. Regular payments
		2. Irregular payments
	2. Access to Services	1.Degree of digitalization of services to the total number
	3. Information security	1. Level of awareness
	4. Quality of services	1. Expenses for administrative services
PR.4. Working market environment	1. Access to markets	1. Degree of market accessibility
	2. Free competition for goods and services	1. Real negotiation of prices
	3. Competitive distribution of public funds	1. Degree of competitive allocation
		2. Opportunities to participate in public procurement
	4.Concentration of resources	1. *K* of concentration of land resource
PR 5. Good private practices	1. Implementation of the regulatory framework	1. Degree of implementation of the regulatory framework
	2. Availability of external control	1. External control of the Management Board
	3.Propriety in relationships	1.Degree of compliance with contracts

Source: Adapted from Sarov, Ivanov, Bachev (2017, p.52)

Based on the principles, criteria and indicators in table 1, the following criteria and alternatives for conducting AHP can be summarized.

Alternatives:

- Good legislation;
- Democratic governance;
- A functioning market environment and good private practices.

Criteria:

- CAP harmonization;
- Satisfaction with EU policies by beneficiaries;
- Representation of manufacturers in the institutional environment;
- Participation of interested parties in the decision-making process;
- Transparency in the distribution of public resources;
- Free competition for goods and services.

When assessing the impact of criteria, it is necessary to make pairwise comparisons between them. In effect, a matrix is created in which the criteria are used as rows and columns. These comparisons are made on a scale from 1/9 to 9, where 1 means that both criteria have an equal influence on the alternatives; 9 means that the criteria in the row have a very strong influence, and the factor in the column has no influence; 1 /9 means, that the criteria in the column have a very strong influence, and the criteria in the row have no influence. Table 2 summarizes the possible scores and their explanation for scoring the items.

The next step is to make a pairwise comparison between the alternatives. The comparison is made according to each of the criteria. The process is visualized in Figure 1.

Table 2. Rating scale

Numerical	Intensity of Importance	Definition Explanation
1	Equal Importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgement slightly favour one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgement strongly favour one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation

Source: (Saaty, Vargas, 2006)

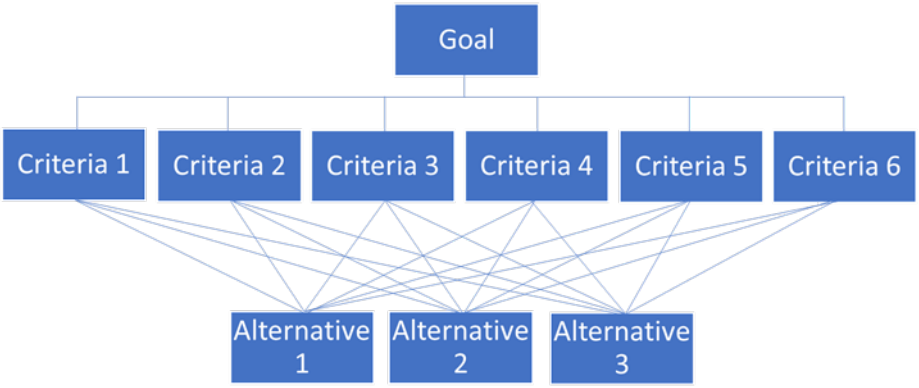

Figure 1. Process of pairwise comparison of alternatives according to each criteria
Source: Saaty, Vargas, 2006

The pairwise comparison of the alternatives is summed up in a square matrix that has n rows and n columns:

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \cdots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{bmatrix} \quad (1)$$

Where aij represents the score from the pairwise comparison between alternative i and alternative j.

During the evaluation, it is possible that some of the evaluations contradict each other. This effect is called inconsistency. Inconsistent estimates can be controlled by using a consistency index and a consistency ratio. (Saaty, 1991):

$$Consistency\ Index\ (CI) = \frac{\lambda max - n}{n-1} \quad (2)$$

Where λmax is the largest value of the positive reciprocal matrix-vector of the pairs of scores of size n. If the comparison pairs are perfectly consistent, then λmax is equal to the matrix size and the consistency factor is zero.

The consistency ratio (CR) measures the degree of departure from perfect consistency. According to Saaty, it is defined as the ratio of the consistency index to an average random consistency index from a large sample of randomly generated matrices.

$$Consistency\ ratio\ (CR) = \frac{CI}{Mean\ Random\ CI} \quad (3)$$

The judgements were carried out through focus groups of five experts. One researcher from scientific institute from the Agricultural Academy), academic staff from the Agricultural University, Plovdiv; New Bulgarian University, Sofia; University of Agribusiness and Rural Development, Plovdiv) and practitioner in the field of agriculture (agricultural producers). In conducting the focus group, experts are asked to make each pair of ratings, with the final rating for each pair of factors being reached by consensus. In conducting the focus group, experts are asked to make each pair of judgments, with the final judgment for each pair of factors being reached by consensus.

Results and Discussion

The first task related to the application of AHP is to evaluate the criteria. This is done with the help of the so-called cluster matrix. During the evaluation of cluster matrix, experts judge each pair of criteria on a scale from 1/9 to 9. All judgments of the criteria are presented in Table 3.

Table 3. Cluster matrix - judgements of the influence of factors in the final decision

Criteria matrix	Harmonization of the CAP	Beneficiaries' satisfaction with EU policies	Representation of producers in the institutional environment	Stakeholder participation in the decision-making process	Transparency in the allocation of public resources	Free competition for goods and services
Harmonization of the CAP	1	1/7	1/7	1/6	1/8	8
Beneficiaries' satisfaction with EU policies	7	1	6	8	8	8
Representation of producers in the institutional environment	7	1/6	1	6	1/6	7
Stakeholder participation in the decision-making process	6	1/8	1/6	1	5	6
Transparency in the allocation of public resources	8	1/8	6	0.2	1	8
Free competition for goods and services	1/8	1/8	1/7	1/6	1/8	1

Source: authors' calculations, 2023

Table 4 shows the result from the calculations of the judgements made in Table 3. The criterion „Satisfaction with EU policies by the beneficiaries" received the highest result with 42.7%. The criteria „Representation of producers in the institutional environment", „Participation of interested parties in the decision-making process", and „Transparency in the distribution of public resources" form a group with approximately the same results, respectively 16.6%, 14.4%, and 18 .1%. The criteria „Harmonization of the CAP" and „Free competition for goods and services" has the lowest rating with 6.0% and 2.2% respectively.

Table 4. Ratings of the factors

Criteria	Assessment
Harmonization of the CAP	6.0%
Beneficiaries' satisfaction with EU policies	42.7%
Representation of producers in the institutional environment	16.6%
Stakeholder participation in the decision-making process	14.4%
Transparency in the allocation of public resources	18.1%
Free competition for goods and services	2.2%

Source: authors' calculations, 2023

Table 5. Judgements and ratings of the alternatives according to the "CAP Harmonization" criterion

CAP Harmonization	Good legislation	Democratic governance	A functioning market environment and good private practices	Weight
Good legislation	1	7	1/6	34.0%
Democratic governance	1/7	1	6	32.7%
A functioning market environment and good private practices	6	1/6	1	33.3%

Source: authors' calculations, 2023

Table 6. Judgements and ratings of alternatives according to the criterion „Satisfaction with EU policies by beneficiaries"

Satisfaction with EU policies by beneficiaries	Good legislation	Democratic governance	A functioning market environment and good private practices	Weight
Good legislation	1	7	1/6	24.5%
Democratic governance	1/7	1	1/7	6.5%
A functioning market environment and good private practices	6	7	1	69.0%

Source: authors' calculations, 2023

Table 5 presents the results from the judgement of the alternatives according to the „Harmonization of CAP" criterion. The alternatives in this case have relatively equal ratings. „Good legislation" has the largest result with 34%. „Working market environment and good private practices" is the second alternative with 33.3%. The lowest result has the alternative „Democracy of governance" with 32.7%.

Table 6 presents the results from the judgement of the alternatives according to the criterion „Satisfaction with EU policies by the beneficiaries". According to this criterion, „Working market environment and good private practices" is the highest-rated alternative with 69.0%. The second is „Good legislation" with 24.5%. The lowest result has the alternative „Democracy of governance" with 6.5%.

Table 7 presents the results from the judgement of the alternatives according to the criterion „Representation of producers in the institutional environment". „Working market environment and good private practices" was again rated first with 67.5%. The second result is for „Democracy of governance" with 25.5%. The lowest result has the alternative „Good legislation" with 7.0%.

Table 8 presents the results from the judgement of the alternatives according to the criterion „Participation of interested parties in the decision-making process". Again, the three alternatives are relatively equal. The „Democracy of governance" alternative is first with 34.0%. The second is „Good legislation" with 33.3%. The alternative „Market work environment and good private practices" is with lowest result with 32.7%.

Table 7. Judgements and ratings of alternatives according to criteria „Representation of producers in the institutional environment“

Representation of producers in the institutional environment	Good legislation	Democratic governance	A functioning market environment and good private practices	Weight
Good legislation	1	1/8	1/6	7.0%
Democratic governance	8	1	1/7	25.5%
A functioning market environment and good private practices	6	7	1	67.5%

Source: authors‘ calculations, 2023

Table 8. Judgements and ratings of the alternatives according to the criteria of the criterion „Participation of interested parties in the decision-making process“

Participation of interested parties in the decision-making process	Good legislation	Democratic governance	A functioning market environment and good private practices	Weight
Good legislation	1	1/7	7	33.3%
Democratic governance	7	1	1/6	34.0%
A functioning market environment and good private practices	1/7	6	1	32.7%

Source: authors‘ calculations, 2023

Table 9. Judgements and ratings of the alternatives according to the criteria „Transparency in the allocation of public resources“

Transparency in the allocation of public resources	Good legislation	Democratic governance	A functioning market environment and good private practices	Weight
Good legislation	1	1/6	1/7	6.8%
Democratic governance	6	1	1/7	22.1%
A functioning market environment and good private practices	7	7	1	71.2%

Source: authors‘ calculations, 2023

Table 9 presents the results from the judgement of the alternatives according to the criterion „Transparency in the distribution of public resources“. „Working market environment and good private practices“ was rated first with 71.2%. The second largest is the alternative „Democracy of governance“ with 22.1%. The lowest is the alternative „Good legislative framework“ with 6.8%.

Table 10 presents the results from the judgement of the alternatives according to the „Free competition for goods and services“ criterion. „Working market environment and good private practices“ was rated first with 71.7%. The second result is for the alternative „Democracy of governance“ with 21.8%. The last result is the alternative „Good legislative framework“ with 6.5%.

Table 10. Judgements and ratings of alternatives according to the criterion „Free competition for goods and services“

Free competition for goods and services	Good legislation	Democratic governance	A functioning market environment and good private practices	Weight
Good legislation	1	1/7	1/7	6.5%
Democratic governance	7	1	1/9	21.8%
A functioning market environment and good private practices	7	9	1	71.7%

Source: authors‘ calculations, 2023

Table 11. Final result of the evaluation of alternatives according to AHP method

Alternatives	Assessment
Good legislation	19.8%
Democratic governance	18.4%
A functioning market environment and good private practices	61.9%

Source: authors‘ calculations, 2023

Table 11 summarizes the final result of conducting the AHP analysis after weighting the results with the criteria ratings from table 3. According to the results obtained, „Working market environment and good private practices“ is the leading alternative with 61.9%. The second result is for the alternative „Good legislation“ with 19.8%. With a small difference is the lowest rated alternative - „Democracy of governance“ with 18.4%.

Conclusions

In conclusion, it should be noted that the obtained results refer to the three alternatives and six criteria for evaluating management sustainability.

Second, the present study is an attempt to make an assessment at the micro level (agriculture), and even more so, the results are of a subjective nature, expressed in the self-assessment of the respondents.

Next, the selected alternatives and criteria are given different weights in the overall evaluation. It follows that they do not have equal strength and impact in assessing sustainability, but rather their relative importance is sought.

In sync with these important clarifications, it should be assumed that for the stakeholders in agricultural holdings in Bulgaria, „Working market environment and good private practices“ is the leading alternative with 61.9%. In second place is „Good legislative framework“ with 19.8%, followed by the alternative „Democracy of governance“ with 18.4%. The results of the assessment according to the prevailing criteria pose many questions about the uncertainty and mistrust in the institutional environment presented by the legislative body and the democratic governance in Bulgaria

From a scientific point of view, it is of interest to repeat the survey and track the responses, given the change in farmers‘ perceptions based on the socio-economic challenges in the last few years, related to the effect of the Covid-19 crisis, the war in Ukraine, migration pressure, the uncertainty of

markets, inflationary processes and political crises.

An adapted AHP approach for assessing the relative importance of governance sustainability principles in agricultural holdings has proven its applicability. It may be a suitable tool for policymakers in analyzing the level of governance sustainability in agricultural holdings. The proposed approach to governance sustainability assessment is useful for science and practice. On this basis, the assessment approach can be extended and further developed by including other alternatives and criteria depending on the purpose, specificity, and environmental conditions.

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