
CONDITIONS OF OBTAINING LOANS FROM THE PERSPECTIVE OF MANAGEMENT OF AGRICULTURAL FARMS AND MEDIUM-SIZED AGRICULTURAL ENTERPRISES, THE EXAMPLE OF THE REPUBLIC OF SERBIA

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ABSTRACT

A number of factors can affect getting a loan. The aim of the study was to determine the possible influence of the following factors: interest rate, loan repayment term, user participation, VAT lending possibilities, agricultural equipment as a pledge, simplicity of the lending procedure, minimum loan amount, adjustment of repayment and total score in the period 2022-2024 on getting a loan. The application of the t-test revealed that there is a strong influence of all the mentioned factors on obtaining loans in agricultural holdings, that is, in the operations of medium-sized agricultural enterprises. The next conclusions would be that the mentioned factors affect the prediction of the interest rate in the business of agricultural farms ($F=185.24$, $p<0.0005$) but also in the business of medium-sized agricultural companies ($F=106.51$, $p<0.0005$) in the Republic of Serbia.

Introduction

Financial support for agricultural development within the framework of the development of an economy is a permanent measure of state authorities and an essential continuous activity that is carried out through measures adopted by state authorities (Javid et al., 2022).

The measures adopted by the state authorities, which are aimed at the agricultural development of an economy, should be seen as a permanent activity undertaken with the aim of better positioning agriculture within the adopted development directions of the

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region (Helming & Peerlings, 2014; Ansah et al., 2018; Soyeh et al., 2021; Zolea, 2022).

Financial monitoring of development programs that are directed towards agriculture are very different and are aimed at specific segments of agriculture (Perez & Herrerias, 2021; Roa et al., 2022; Ansah et al., 2023; Azumah et al., 2023; Bawuah et al., 2023).

The financing of agricultural production is largely adapted to the form of agricultural production (Strauss et al., 2021; Zhou et al., 2021; Chami et al., 2022; Mazumder & Kabir, 2022; Barba, 2023; Han & Gen, 2023; Angioloni et al., 2023). Very often, issues of agricultural financing are associated with the concept of crediting farmers, which is important in a large number of individual ways of financing agricultural production itself (Sood, et al., 2022; Hasam et al., 2022; Abeyesiriwardana et al., 2022; Attilio, 2023; Mulimbi et al., 2023; Waaswa et al., 2024).

Crediting of agricultural production is often linked to the monitoring of innovative approaches in agriculture in a very wide range of activities, from agricultural mechanization, irrigation systems, systems for processing agricultural products, systems for processing bio-waste generated in agriculture, etc. (Uni, 2020; Kish, 2022; Pircher et al., 2022; Bentley et al., 2022; Kotyrlo & Zaytsev, 2023; Alrawashdeh et al., 2023).

The role of lending in agriculture is of particular importance both based on the different forms of ownership of the organization of agricultural production, as well as in relation to the size of the agricultural organization, that is, in relation to the types of loans issued by banks to agriculture (Takagi et al., 2021; Cosby et al., 2022; Javangwe & Takawira, 2022; Geza et al., 2023; Zubair, 2024).

Theoretical background

The framework that regulates credit relations between legal entities at the level of one state is regulated by the umbrella law in this area. In the Republic of Serbia, the umbrella relationship that regulates banking business is regulated on the basis of the current Law on Banks ("Official Gazette of RS", no. 107/2005, 91/2010 and 14/2015).

In addition to the existence of the above-mentioned umbrella law, which regulates issues in the domain of banking operations, state authorities pass other legal solutions and regulations that clarify the aforementioned relations in the functioning of heterogeneous legal entities.

One of the important regulations regarding the regulation of this area is the Regulation on financial support to agricultural holdings through easier access to the use of loans in difficult economic conditions due to the disease covid-19 caused by the virus sars-cov-2 ("Official Gazette of RS", no. 57/2020).

Emphasizing the importance of the aforementioned regulation is reflected in the fact that the state reacts quickly in the field of agriculture in the event of major disruptions in the market, which also happened in the case of the application of other laws that

monitored the area of damage reduction from the presence of Sars-cov-2, and which in this case, it directly affected the field of agriculture as one of the most important activities for the normal functioning of the population.

In addition, the very performance of activities through a large number of agricultural holdings, but also through an extremely vital number of medium-sized enterprises that perform the predominant activity in agriculture, is closely related to the establishment of numerous relationships that can be seen primarily as market-regulated relationships, which can be seen in numerous works by authors such as (Kumari & Garg, 2023; Ayanwale, 2004) And above all from the point of view of development.

Agriculture as an important segment of the stability of an economy, primarily from the point of view of ensuring the satisfaction of the population's needs with pre-food products created by agriculture, and later processed by the dominant food industry, relies to a large extent on the existence of numerous banking instruments that follow these activities of the state (Teye & Quarshie, 2022; Burova et al., 2022).

Everyone should point out that the aforementioned activities of the state regarding the development of the agrarian and food sector in an economy are directly connected to the observation of social-credit relations and which essentially follow all phases of the movement of goods and services connected to agricultural holdings and medium-sized agricultural enterprises (Lee, 2019; Shu, 2021), which essentially served as a realistic basis for the authors in the preparation of this study.

Materials and methods

The authors conducted research by applying a survey in 155 agricultural farms and 78 medium-sized agricultural enterprises operating in the territory of the Republic of Serbia. Therefore, the survey was conducted in a total of 233 holders of agricultural activities. The research period was from 01.01.2022 to 01.01.2024.

The goal of the research was to determine the possible impact of the analyzed factors on obtaining loans in agriculture. Factors affecting obtaining a loan were analyzed, namely: interest rate, loan repayment period, participation of the loan beneficiary, possible VAT crediting, lending of agricultural equipment as collateral for obtaining a loan, simplicity of the procedure for obtaining a loan, minimum loan amount, the possibility of adjusting the loan repayment plan as and the total score of the mentioned factors.

The survey was completed by owners of agricultural holdings as well as by owners of medium-sized agricultural enterprises. Participants in the survey were given the opportunity to rate the influence of each of the factors in the interval 1-10, with 1 indicating weak influence and 10 indicating very strong influence.

After collecting data by surveying, statistical processing was performed and a comparison was made of the evaluation of two forms of organizing agricultural production, that is, the evaluation of the owners of agricultural holdings with the evaluation of the owners of medium-sized agricultural enterprises.

After that, the obtained differences were tested using the t-test. In the following, the authors went a step further and predicted the impact of the analyzed factors for agricultural holdings and for medium-sized agricultural enterprises.

Hypotheses

The setting of hypotheses was done in such a way as to determine the existence of the influence of the analyzed factors on obtaining loans in agricultural farms and medium-sized agricultural enterprises.

To that end, the authors put forward the following hypotheses.

H:1 that there are no differences in terms of obtaining loans in relation to the form of organizing agricultural production for 2022.

H:2 that there are no differences in terms of obtaining loans in relation to the form of organizing agricultural production for 2023.

H: 3 that there are no differences in terms of obtaining loans in relation to the form of organizing agricultural production for 2024.

H: 4 that the level of the interest rate cannot be predicted based on the rest of the other factors, that is, the conditions for obtaining loans for the operation of agricultural farms.

H: 5 that the level of the interest rate cannot be predicted based on the rest of the other factors, i.e. the conditions for obtaining loans for the business of medium-sized agricultural enterprises.

Data processing

Statistical data processing and analysis were performed using (Statistical Package of Social Science). In the paper, the t test of independent samples was applied to examine the differences between agricultural farms and medium-sized agricultural enterprises in relation to the analyzed factors, as well as in relation to the values of the total score of all factors affecting obtaining loans.

Regression analysis was applied to predict the level of the interest rate in two forms of organizing agricultural production, that is, for organizing agricultural production in agricultural farms as well as in the organization of agricultural production in medium-sized agricultural enterprises.

A significance threshold of 0.05 was used.

Results

The obtained results covered a three-year research period, i.e. from 2022 to 2024. They refer to showing the difference in terms of lending in two forms of agricultural production organization. The first form is agricultural holdings, and the second form is medium-sized agricultural enterprises in the Republic of Serbia.

The results of the research were done with the analysis of 8 factors, as well as their overall score, which can affect the crediting process in the aforementioned branches of the organization of agricultural production, as well as with the strengthening of the obtained results using the t-test of independent samples.

The results were formed within the framework of two logical units that complement each other, and based on both units; it is possible to form a safe opinion regarding the entire process of agrarian lending.

Formation of established differences in relation to the process of obtaining loans in the period 2022-2024

The results obtained in relation to the formation of established differences in relation to the process of obtaining loans in 2022 are shown in Table 1, which were created by evaluating the value of both forms of agricultural production organization.

Table 1. Differences in conditions for obtaining loans for 2022

Influencing factors on obtaining loans	Agricultural farms (N=155)	Secondary agricultural enterprises (N=78)	t	p
	Middle value			
The amount of the interest rate	8.55 ± 0.49	5.57 ± 0.49	43.062	<0.0005*
Loan repayment term	8.59 ± 0.49	6.58 ± 0.49	29.247	<0.0005*
Participation of loan beneficiaries	8.81 ± 0.98	7.38 ± 0.80	11.056	<0.0005*
The possibility of crediting VAT	8.70 ± 0.49	4.79 ± 0.40	66.322	<0.0005*
Lending of equipment as a pledge to secure a loan	3.55 ± 0.49	7.79 ± 0.40	-69.505	<0.0005*
Simplicity of the loan realization procedure	8.81 ± 0.97	6.20 ± 0.40	28.624	<0.0005*
Minimum loan amount	6.25 ± 0.69	8.78 ± 0.41	-34.552	<0.0005*
The possibility of adjusting the loan repayment plan	6.60 ± 0.49	9.34 ± 0.47	-40.575	<0.0005*
Total score	59.89 ± 1.64	56.47 ± 1.24	16.115	<0.0005*

* Statistical significance at the level of 0.05

Source: Authors.

The results obtained in relation to the formation of established differences in relation to the process of obtaining loans in 2023 are shown in Table 2, which were created by evaluating the value of agricultural holdings and medium-sized agricultural enterprises.

Table 2. Differences in terms of obtaining loans for 2023

Influencing factors on obtaining loans	Agricultural farms (N=155)	Secondary agricultural enterprises (N=78)	t	p
	Middle value			
The amount of the interest rate	7.10 ± 0.63	4.20 ± 0.76	29.036	<0.0005*
Loan repayment term	6.18 ± 1.66	4.79 ± 0.40	9.858	<0.0005*
Participation of loan beneficiaries	6.96 ± 0.92	6.01 ± 0.91	7.420	<0.0005*
The possibility of crediting VAT	7.55 ± 0.73	3.38 ± 0.48	51.313	<0.0005*
Lending of equipment as a pledge to secure a loan	2.55 ± 0.73	6.19 ± 0.77	-34.874	<0.0005*
Simplicity of the loan realization procedure	7.05 ± 0.74	4.61 ± 0.48	26.358	<0.0005*
Minimum loan amount	4.85 ± 0.65	6.03 ± 1.27	-7.735	<0.0005*
The possibility of adjusting the loan repayment plan	5.15 ± 0.65	7.56 ± 1.06	-18.321	<0.0005*
Total score	47.43 ± 3.48	42.80 ± 2.75	10.220	<0.0005*

* Statistical significance at the level of 0.05

Source: Authors.

The results obtained in relation to the formation of established differences in relation to the process of obtaining loans in 2024 are presented by the author in Table 3, which were created by evaluating the value of agricultural holdings and medium-sized agricultural enterprises.

Table 3. Differences in conditions for obtaining loans for 2024

Influencing factors on obtaining loans	Agricultural farms (N=155)	Secondary agricultural enterprises (N=78)	t	p
	Middle value			
The amount of the interest rate	9.00 ± 0.54	6.41 ± 0.49	36.373	<0.0005*
Loan repayment term	6.21 ± 4.06	7.61 ± 0.48	-4.215	<0.0005*
Participation of loan beneficiaries	9.44 ± 0.49	8.62 ± 0.80	8.184	<0.0005*
The possibility of crediting VAT	9.44 ± 0.49	5.38 ± 0.37	61.873	<0.0005*
Lending of equipment as a pledge to secure a loan	4.74 ± 0.70	9.03 ± 0.61	-48.098	<0.0005*
Simplicity of the loan realization procedure	9.60 ± 0.49	7.25 ± 1.16	17.044	<0.0005*
Minimum loan amount	7.19 ± 0.80	9.43 ± 0.49	-22.469	<0.0005*
The possibility of adjusting the loan repayment plan	7.59 ± 0.73	9.78 ± 0.41	-24.367	<0.0005*

Influencing factors on obtaining loans	Agricultural farms (N=155)	Secondary agricultural enterprises (N=78)	t	p
	Middle value			
Total score	63.24 ± 4.93	64.00 ± 2.47	-1.271	0.122

* Statistical significance at the level of 0.05

Source: Authors.

Forecasting the level of the interest rate in relation to the form of organizing agricultural production

The forecast of the interest rate in relation to the form of organization of agricultural production is given in the form of two views, that is, in the view of the forecast of the interest rate in agricultural holdings and after that in the forecast of medium-sized agricultural enterprises.

Table 4. Prediction of interest rates for agricultural holdings

	Beta	t	p
A constant	-	11.904.	<0.0005*
Loan repayment term	-0.028	-1.068	0.286
Participation of loan beneficiaries	0.168	4.397	<0.0005*
The possibility of crediting VAT	0.069	1.809	0.071
Lending of equipment as a subject of loan security	0.274	6.200	<0.0005*
Simplicity of the loan realization procedure	0.106	2.631	0.009*
Minimum loan amount	0.278	6.786	<0.0005*
The possibility of adjusting the repayment plan	0.108	2.433	0.015*

* Statistical significance at the level of 0.05

Source: Authors.

Table 5. Prediction of interest rates for medium-sized agricultural enterprises

	Beta	t	p
A constant	-	3.250.	<0.0001*
Loan repayment term	1.094	10.127	<0.0005*
Participation of loan beneficiaries	-0.463	-6.661	<0.0005*
The possibility of crediting VAT	-0.055	-0.575	0.566
Lending of equipment as a subject of loan security	-0.073	-0.999	0.319
Simplicity of the loan realization procedure	0.168	2.908	0.004*
Minimum loan amount	0.104	1.581	0.115
The possibility of adjusting the repayment plan	0.055	0.978	0.329

* Statistical significance at the level of 0.05

Source: Authors.

Discussion

Based on the results shown in Table 1, it can be seen that for the year 2022, there is a statistically significant difference in relation to the form of agricultural organization in all factors that can affect obtaining loans.

Owners of agricultural holdings value more the interest rate, loan repayment term, participation of the loan beneficiary, the possibility of VAT crediting, the simplicity of the loan implementation procedure and the total score.

Owners of medium-sized agricultural enterprises have a stronger belief in equipment lending as an item that ensures obtaining a loan, then the minimum loan amount, as well as the possibility of adjusting the loan repayment plan.

Based on that, Hypothesis 1 can be safely rejected, that is, there are differences in relation to the analyzed factors and their impact on the process of obtaining loans in the mentioned two forms of organizing agricultural production for 2022. Essentially, the obtained results coincide with the already expressed views of the author (Zelenović et al., 2018).

Based on the results shown in Table 2, it can be seen that for the year 2023, there is a statistically significant difference in all factors affecting the process of obtaining loans in relation to the form of organizing agricultural production.

Owners of agricultural holdings more strongly value the interest rate, loan repayment period, participation of loan beneficiaries, the possibility of VAT crediting, the simplicity of the loan implementation procedure and the total score, while the owners of medium-sized agricultural enterprises more strongly value equipment lending as a loan security item, the minimum loan amount and the possibility adjustments to the loan repayment plan.

Based on that, Hypothesis 2 can be rejected, that is, there are differences in the conditions for obtaining loans in relation to the form of agricultural organization for 2023. The obtained results are compatible with the already published views (Popović et al., 2018) regarding the importance of making valid management decisions in the regular operations of agricultural companies.

Based on the presentation of the results in Table 3, it can be seen that for the year 2024, there is a statistically significant difference in relation to the form of agricultural organization in all the analyzed factors that can affect obtaining a loan, except for the overall score.

Agricultural farms better rate the interest rate, the participation of loan beneficiaries, the possibility of crediting VAT and the simplicity of the loan realization procedure, while medium-sized agricultural companies better rate the term of loan repayment, equipment lending as a subject of loan security, the minimum loan amount and the possibility of adjusting the loan repayment plan. Hypothesis 3 can be rejected, that is, there are differences in the conditions for obtaining loans in relation to the observed form of agricultural production for 2024. The results are also such that they indicate the

importance of valuation, primarily financial valuation, which can be seen in the already published views of the author (Radović et al., 2023), which was essentially the focus of this study.

In the research, the authors applied multiple linear regression, that is, whether it is possible to predict based on the loan repayment period, the participation of the loan beneficiary, the possibility of crediting VAT, crediting of equipment as a subject of loan security, the simplicity of the loan implementation procedure, the minimum loan amount and the possibility of adjusting the repayment plan the interest rate for agricultural holdings.

The regression analysis yielded a coefficient of determination of 0.739, on the basis of which it can be seen that the obtained model describes 73.9% of the total variance. The level of the interest rate can be predicted based on the independent variables since the model is statistically significant ($F=185.24$, $p<0.0005$).

Based on the results shown in Table 4, it can be seen that the participation of the loan beneficiary, the lending of equipment as a subject of loan provision, the simplicity of the loan implementation procedure, the minimum loan amount and the possibility of adjusting the loan repayment plan have a significant impact on the prediction of the interest rate. Therefore, it can be seen that hypothesis 4 can be rejected because the obtained results showed that the level of the interest rate can be predicted based on the rest of the set factors, that is, the conditions for obtaining a loan, which is necessary in the business of agricultural farms.

In essence, the results obtained by the authors coincide with those who emphasized the importance of realistic application of internal control in business (Radović et al., 2021; Vitomir et al., 2021).

Based on the application of multiple linear regression to examine whether based on the term of loan repayment, the participation of loan beneficiaries, the possibility of crediting VAT, crediting of equipment as a subject of loan security, the simplicity of the loan realization procedure, the minimum loan amount and the possibility of adjusting the repayment plan to predict the interest rate for medium-sized agricultural enterprises.

The regression analysis yielded a coefficient of determination of 0.767, on the basis of which it can be concluded that the obtained model describes 76.7% of the total variance. The level of the interest rate can be predicted based on the independent variables since the model is statistically significant ($F=106.51$, $p<0.0005$).

Based on the results shown in Table 5, it can be seen that the loan repayment term, the participation of the loan beneficiary and the simplicity of the loan realization procedure have a significant impact on the prediction of the interest rate. Therefore, it can be seen that hypothesis 5 can be rejected because the obtained results showed that the level of the interest rate can be predicted based on the rest of the set factors, that is, the conditions for obtaining a loan, which is necessary in the business of medium-sized agricultural enterprises.

This coincides with the already stated views on the importance of establishing real internal control mechanisms, which was highlighted in works (Novaković et al., 2018; Paor, 2021).

Conclusions

With this study, the authors showed that there is a theoretical and functional significance for all eight factors as well as for the factor of their overall score, which can affect the obtaining of loans in the observation period of 2022-2024.

Therefore, the first conclusion of the authors of the study would be that there is a strong influence of all the mentioned factors on obtaining loans in agricultural business, as well as that there is a statistically significant difference in relation to obtaining loans both in agricultural farms and in the business of medium-sized agricultural enterprises in the Republic of Serbia.

Another conclusion would be that based on the application of multiple linear regression based on the term of loan repayment, the participation of the loan beneficiary, the possibility of crediting VAT, lending agricultural equipment as a subject of loan security, the simplicity of the loan realization procedure, the minimum loan amount and the possibility of adjusting the repayment plan can be to predict the level of the interest rate for agricultural holdings.

The third conclusion would be that based on the previously listed factors, the level of the interest rate in the business of medium-sized agricultural enterprises in the Republic of Serbia can be predicted.

Based on the conclusions presented in the study, the authors point out that there is full justification for this study because they showed the essential existence of the influence of the analysed factors on obtaining loans, both in agricultural farms and in medium-sized agricultural enterprises. In addition, in subsequent research it is possible to continue the presented research by expanding it to analyze other factors as well as to other entities that participate in the organization of agricultural production.

Conflict of Interests

The authors declare no conflicts of interest.

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