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CONTENT

HOW TO MEET EMPLOYEES' EXPECTATIONS IN TERMS OF JOB SATISFACTION AND STABILISATION IN THE AGRIBUSINESS INDUSTRY

Nadežda Jankelová[1], Zuzana Joniaková[2], Katarína Remeňová[3], Ildikó Némethová[4]

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ABSTRACT

Motivation is one of the most important management tools to ensure employees' job satisfaction and stabilisation. Effective motivation programmes can only be developed through an in-depth understanding of employee motivation profiles. The aim of this paper is to analyse the motivation factors of employees in terms of their job satisfaction and stabilisation in the agribusiness industry. The methodological framework of the survey is Herzberg's two-factor motivation theory. Independent variables were tested using test statistic methods with the most significant deviations. An independent t-test was used for each motivation factor. The biggest negative deviations were found in the factors of income, responsibility and working conditions, employee benefits, content of work, its recognition and the possibility of advancement. A statistically significant difference was found at the age and education of respondents. Younger employees and university-educated employees showed a marked difference between their expectations and satisfaction by employers.

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Introduction

Agribusiness has many functions in society in relation to long-term sustainability. It ensures the production of healthy, high-quality food, protects natural resources and the cultural landscape, while contributing to the maintenance of a viable rural area (Blaas et al., 2010). Its role in securing job opportunities is also irreplaceable. All these functions lead to the need to promote the sustainability of the agribusiness industry. An important role is played by the formation and stabilisation of employee potential in agribusiness, which is the task of management. Understanding the motivation profiles of employees can help agribusiness companies create conditions that contribute to job satisfaction and hence stabilise the human factor in the sector. Employee motivation is an important tool in business management and is closely related to other crucial tools such as remuneration and job satisfaction (Armstrong and Murlis, 2007). Knowledge of motivation profiles of employees is the starting point of creating motivation programmes leading to job satisfaction. Motivation theories help to clarify the nature of human behaviour and find ways to guide and support human initiative and action towards a particular goal. The most renowned theories include Alderfer's ERG theory, Herzberg two-factor theory, McClelland's achievement theory, Maslow's needs hierarchy theory, Adams equality theory, the expectation theory, the stimulus theory, and motivational work design. It should be, however, pointed out that neither of them provides guaranteed guidance for effective motivation. Similarly, it would not be appropriate to consider them as independent and prefer only some of them. They can complement each other to create an effective integrated whole as a theoretical basis for motivation processes in practice. An important fact is that the choice of appropriate motivation tools depends on the structure of employees' needs and their intensity. It is therefore clear that the basis of an effective motivation programme of any organisation is the knowledge of the motivation structure of individual employees or groups or professions and thorough considerations about the choice of motivation tools.

The basic motivation tool in a company is its remuneration system. A comprehensive holistic approach is applied to remuneration, in which the concept of total compensation resonates. This includes various types of rewards, such as indirect, direct, internal and external (Manas and Graham 2002). Total remuneration includes everything that employees perceive as fair compensation, in exchange for their effort and time spent at work (Chen and Hsieh 2006). Total remuneration is therefore a crucial tool for managing problems related to the recruitment and stabilisation of employees, as well as influencing their behaviour. Some authors refer to three main categories of remuneration that co-create total remuneration, i.e. external, internal and social (Williamson et al. 2009, Morgan et al., 2013, Twenge et al., 2010, Alhmound and Rjoub 2019).

Businesses are increasingly interested in understanding the impact of human resources management practices and tools on their employees' attitudes and behaviours (White and Bryson 2013). Several research studies have dealt with the impact of total remuneration on employee behaviour and performance. These have confirmed a positive link between human resources management systems, employee performance and improved business

performance (Purcell et al., 2009). The impact of total remuneration on positive attitudes and behaviour of employees, on job satisfaction, emotional commitment and innovative behaviour of employees was also confirmed by Peluso (2017). Employees that are satisfied with their work are more likely to be stable, productive and business-oriented. Several authors have examined the relationship between total remuneration, happiness at work, and employee engagement (Hofman 2014, Saks 2006). The results of the studies suggest that total remuneration affects employee happiness through their engagement at work. Thus, engagement acts as a mediational factor. Ryan and Deci (2000) argue that total remuneration of employees is related to a positive working approach through internal drive, i.e. employee engagement. This promotes a sense of achievement, generates satisfaction and a positive sense of work. An employee experiences happiness when goals are achieved, and his or her needs are met. According to Baker et al. (2014), if employees receive remuneration in the form of autonomy, recognition, training and development opportunities, they will make further efforts to achieve the goals and accomplish the assigned tasks. This kind of remuneration creates enthusiasm for learning new skills, increases employee activity and interest in meeting goals, expanding the range of opportunities and increasing employees' sense of success. Thus, total remuneration does not directly affect the happiness of employees, but indirectly through increased work commitment (Gulyani end Sharma 2018).

In conclusion, total remuneration in employee motivation can serve as a source of competitive advantage for businesses, aligning employee performance with business goals (Peluso 2017), since engaging and combining different forms of motivation serves as a source of overlapping and mutually reinforcing influence on the performance of employees (Innocenti et al., 2011).

Materials and methods

The methodological framework of our research is Herzberg's two-factor motivation theory. We have chosen this theory to link the elements of motivation and job satisfaction. It is a simple and transparent tool that allows to explore motivation and job satisfaction as two aspects of human resources management. Motivation and job satisfaction are linked through a pair of factors. On the one hand, they refer to dissatisfactors, or hygienic or frustrating factors that are focused on job satisfaction. These create suitable working conditions and are the external factors of motivation. On the other hand, they pertain to motivators or motivational factors that are the internal factors of motivation. These are directly related to the content and purpose of the work and are a prerequisite for motivation for higher work performance, and their effect on motivation is long-term. Employee satisfaction is influenced by hygienic factors. If these are provided at an insufficient level, they are the source of employee dissatisfaction and frustration. Conversely, if they are set up appropriately, they have the ability to influence employee satisfaction but do not have a direct impact on employee motivation. However, they are equally important to the company because long-term dissatisfaction is a barrier to the employee's motivation to work.

Due to the specifics of the agribusiness labour market, we have adjusted the factors presented in Herzberg's theory to reflect the specific aspects of this environment. We have chosen the following factors: relations with superiors, relationships with co-workers, status, occupational prestige, organisation image, organisation management (employee awareness), job security, income, employee benefits, working conditions (including the possibility of using modern technical and technological equipment), company culture, career advancement, recognition of personal outcome of work, work itself in terms of its content, possibility of education, responsibility. According to Herzberg, the first 10 factors are hygienic factors, whereas the other factors are motivators.

The survey focused on the analysis of motivation factors of employees in agribusiness companies in terms of job satisfaction and stabilisation in Slovakia. It aimed to find answers to the following research questions:

1. What are the main motivating factors for agribusiness workers?
2. Are there differences between employee expectations and their saturation by management in agribusiness companies?

The following procedure has been chosen:

- identifying individual preferences for motivation factors in the sample of employees,
- finding satisfaction and saturation of motivation factors in the surveyed agribusiness companies,
- analysis of the differences between employees' personal preferences and their subjectively perceived satisfaction within human resources policies in agribusiness companies,
- synthesis of knowledge about motivation factors and job satisfaction of agribusiness employees.

The data needed to answer the set research questions were obtained using a structured questionnaire, which we distributed to agribusiness employees after obtaining consent from their management. We addressed a total of 50 businesses of different legal forms within the agribusiness sector. We chose these agribusiness companies with the intention to homogenise the sample in terms of production areas which were significant in agribusiness operations. The survey was conducted in western Slovakia, where the most productive agricultural areas were located. 35 companies (15 agricultural cooperatives and 20 limited liabilities) were willing to participate in our survey and complete 450 questionnaires. We designed the questionnaire as simply as possible to avoid burdening the respondents and motivating them to cooperate. The research tool consisted of two main parts. The first part focused on the identification data of respondents, i.e. their sex, age, highest-level of education, length of practice. The second part dealt with the motivation aspects of the working activity. Employees were asked to express their subjective perception of the significance of individual motivation factors (A) and how satisfied they felt by the management of the business (B). In order to ensure the

clarity and simplicity of the questionnaire, but also in order to obtain a rich spectrum of information, the identified motivation factors were classified and then submitted to the employees. Their task was to rank the factors according to individual significance (from 1 to 15). Value 1 was the most significant factor for the respondent, while value 15 was assigned to the factor that the employee ascribed as the least significant. A similar procedure was then used to determine the actual saturation degree of the factors. Respondents set the order according to their level of satisfaction. The choice of the identical way of measuring the significance of both aspects examined (significance and saturation) allowed for the comparison of findings and the subsequent determination of the deviations.

To identify the factors that showed the most significant deviations, we tested independent variables using test statistic methods. We used an independent t-test for each motivation factor and compared the average ranking differences. We were working on a significance level of 5%.

Results and Discussions

The results have been arranged in two figures according to the average ranking within the chosen motivation factors. Figure 1 provides an insight into the significance of motivation factors by agribusiness employees. It is clear that the income factor came first in the average ranking of 1.3. Almost all respondents rated this as significantly motivating. Based on Herzberg's theory, however, this is a hygienic factor. When appropriately secured, it is hardly perceived by employees, on the other hand, if it is missing, there is considerable dissatisfaction. According to Herzberg, financial evaluation does not directly affect employee motivation. Employees' responsibility (average 2.9) and the content of the work performed (average 4.1) ranked second and third. These are motivators with a direct impact on employee motivation and performance. Furthermore, they consider working conditions, recognition of work results as well as relationships with colleagues as significant. They attach less significance to corporate culture, career advancement, employee benefits, job security, company management awareness, as well as relationships with superiors. The last rungs of their interest included educational opportunities, status, prestige of the profession and the policy of the organisation, which are not perceived by them as significant motivating factors. Knowing the preferences and perceptions of individual factors is a prerequisite for informed decision-making and the findings can therefore be an important incentive for agribusiness management.

Figure 2 provides an overview of the current rate of saturation of the motivation factors in agribusiness companies. The results show how employees' expectations are achieved in terms of motivation. Employees ranked the individual factors 1 to 15, where the value of 1 is obtained by the factor which fulfils employee satisfaction, and the value of 15 is a factor that is perceived by the employees as very poorly satisfied. We can talk about subjectively perceived saturation of motivation factors. Individual values were then averaged. It is clear from the figure that the relationship with co-workers is

at the first place in terms of the degree of saturation of motivation factors, the average value of which is 2.2. Job security is immediately behind it, with an average of 2.9, and it is followed by the organisation's policy (4.8) and management awareness (5.9). Knowledge about these factors is important, and as they are hygienic factors, they help to eliminate work dissatisfaction, but they do not stimulate performance motivation. Relationships with superiors and corporate culture are also positively assessed by employees. Conversely, factors that most closely meet employees' expectations are income (13.9), employee benefits (13.2), responsibility (11.8) and working conditions (11.7).

Figure 1. Employee opinions on their personal motivation factors

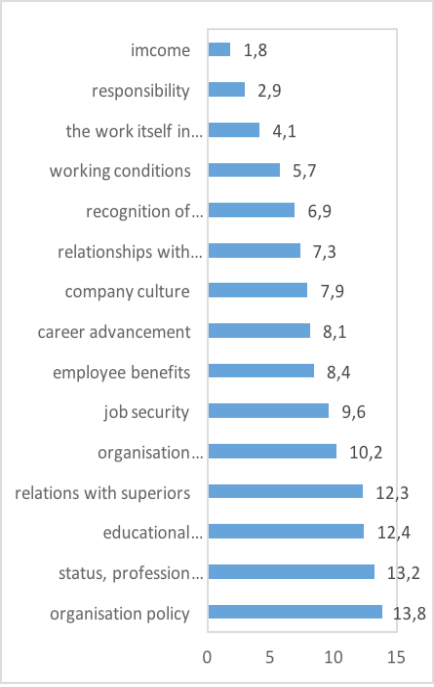
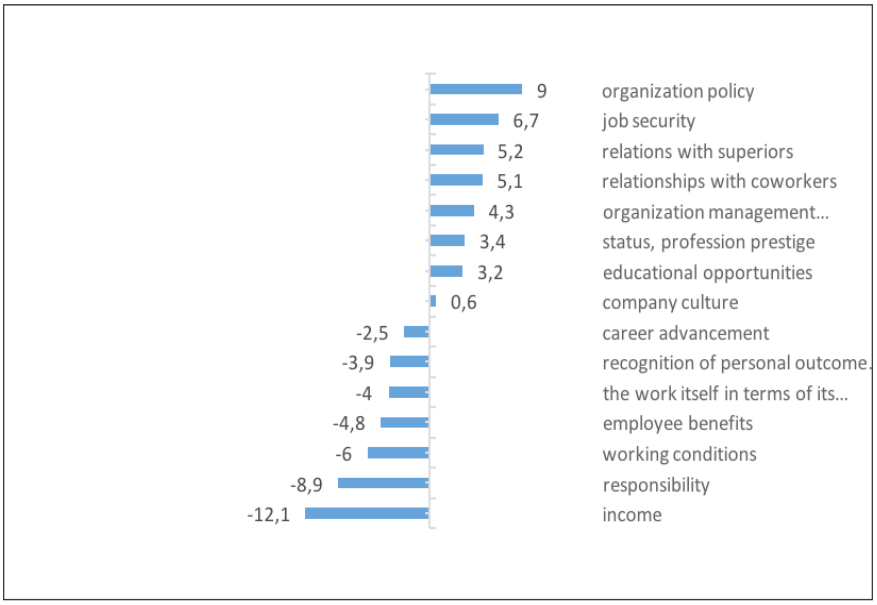


Figure 2. Employees' expectations of motivation by employers

Source: Authors' own processing

We then compared the obtained results, using the deviations between employees' expectations and their satisfaction by employers. It is obvious that the optimal, or a desirable situation arises when a factor rated as significant by the employee (has the lowest value assigned) shows a high degree of saturation by the employer (also has the lowest value assigned). A critical situation arises when a high degree of significance by the employee is linked to poor satisfaction by the employer. High deviations indicate a significant divergence between the personal ranking of employees' priorities and their satisfaction by the employer. They can cause work dissatisfaction and become a factor causing frustration.

Figure 3. Deviations between employee expectations and their satisfaction by the employer



Source: Authors' own processing

The greatest negative deviation is shown by the income factor (-12.1). Such tension can be a source of strong employee dissatisfaction. Income comes first in importance among employees' motivation factors. According to Herzberg's motivation theory, it is a motivator that causes a high level of job dissatisfaction. Significant negative deviation has also been reflected in the responsibility factor (-8.9). Employees perceive this factor as strongly motivational (comes second in importance), but it is currently neither satisfied nor fulfilled. Responsibility as a motivator greatly influences job satisfaction and motivation for performance. Negative deviations have been identified in working conditions and employee benefits, which are again dissatisfactors with the potential to cause significant work dissatisfaction, but also in motivation factors such as the content of work, the recognition of work outcomes and the possibility of progress, affecting not only work satisfaction but also motivation. However, these are currently not being fulfilled in agribusiness companies. Positive deviations suggesting management's commitment to meeting the motivational expectations of its employees have been identified in relation to corporate relationships, management and its efforts to share information, and in relation to corporate policy and corporate culture.

Differences in motivation factors according to individual identification characteristics were examined at the highest negative deviations. A statistically significant difference was found at the age and education of respondents. We used an independent t-test for each motivation factor, comparing the average ranking differences for the two groups of employees, younger (up to 40 years of age) and older (over 40 years of age), as well as for employees with and without higher education. The results are shown in the following tables.

Table 1. Difference between expectations and satisfaction within motivational aspects by age

	All respondents	By age		T-statistic (absolute value)	degrees of freedom	P-value (bilateral)
Motivation		younger	older			
Job security	-6,9	-6,0	-7,8	0,477	448	0,63
Relationships with co-workers	0,6	0,8	0,4	0,970	448	0,33
Income	-8,3	-9,5	-5,4	2,027	448	0,04
Contents of work	1,2	1,8	0,6	0,510	448	0,61
Responsibility	-4,6	-7,3	-2,1	2,192	448	0,03
Recognition of work	-3,2	-6,1	-1,9	2,247	448	0,03
Company culture	0,6	0,6	0,6	1,197	448	0,23
Career progression	-2,1	-1,6	-2,6	1,092	448	0,28
Working conditions	-3,3	-6,4	-1,8	2,569	448	0,01
Relationship with the supervisor	3,7	3,2	4,2	0,202	448	0,84
Employee benefits	-2,9	-3,8	-2,0	0,040	448	0,97
Profession prestige	4,3	5,3	3,3	0,314	448	0,75
Education	5,2	4,8	5,6	0,416	448	0,68
Management	1,3	0,5	2,1	0,747	448	0,46
Image	8,4	8,2	8,6	1,006	448	0,31

Source: Authors' own processing

Table 2. Difference between expectations and satisfaction in terms of motivation according to education

	Respondents	By education		T-statistic	df	P-value
Motivation		Higher education	Without higher education			
Job security	-6,9	-8,5	-5,4	0,366	448	0,71
Relationships with co-workers	0,6	-1,3	2,5	1,026	448	0,31
Income	-8,3	-8,5	-8,1	0,151	448	0,88
Content of the work	1,2	-1,9	4,3	2,447	448	0,01
Responsibility	-4,6	-7,2	-2,1	2,647	448	0,01
Recognition of work	-3,2	-7,8	1,4	2,180	448	0,03
Company culture	0,6	0,9	0,3	0,325	448	0,75

	Respondents	By education		T-statistic	df	P-value
Career progression	-2,1	-6,4	2,2	2,585	448	0,01
Working conditions	-3,3	-2,2	-4,4	0,742	448	0,46
Relationship with the supervisor	3,7	3,0	4,4	0,834	448	0,40
Employee benefits	-2,9	-2,9	-2,9	1,310	448	0,19
Profession prestige	4,3	3,8	4,8	0,360	448	0,72
Education	5,2	5,5	4,9	0,762	448	0,45
Management	1,3	1,1	1,5	0,130	448	0,90
Image	8,4	9,2	7,6	0,408	448	0,68

Source: Authors' own processing

The most significant differences in terms of the age of employees were found in the motivation factors such as income, responsibilities, working conditions and recognition of personal results of work, and these differences were at a significance level of 5%. This means that there were higher negative deviations in these factors in the case of younger employees and therefore there is a significant difference between the expectations of younger employees in these factors and their fulfilment by the employer. We achieved the same significant result in terms of employee education. Employees with higher education have shown higher negative deviations for the factors of responsibility, content of work, recognition of personal outcome and career advancement, where there is a significant difference between the expectations of higher education employees in these factors and their fulfilment by the employer.

Conclusions

The results of the survey have shown that income is clearly the most significant motivation factor for agribusiness employees. These findings are consistent with the conclusions of Hitka et al. (2019) who examined and analysed the motivation of employees in terms of gender, work category and age in companies in Slovakia. The results also show that the financial category, including basic salary, other financial remuneration, including fair remuneration, is the main motivation for all work categories in all age groups. At the same time, income is the factor in which employees' expectations diverge most from reality. Negative deviation between the rate of significance and saturation of this factor is the highest among all surveyed. This is more noticeable in the category of employees under 40 years of age. These findings are important because they verify the failure to meet employees' expectations, what requires an urgent solution in the agribusiness industry to stabilise the human factor and build competitiveness on the labour market. In addition, the findings of Kolman et al. (2006) highlight that if people do not trust that they will be fairly rewarded for their work, this in turn reduces their responsibility and interest in the work itself. In the evaluation of the significance of

individual motivational factors, motivators such as employee responsibility, work itself and recognition of the results were highly ranked in agribusiness companies. These factors, having the ability to stimulate performance growth, are assessed by employees as important. Management should therefore pay due attention to them. Responsibility is, however, the category where saturation falls short of significance, which is most felt in the category of younger and educated employees. Likewise, the factors of work content and the recognition of outcome, which are perceived as important by employees, show high negative deviations. Positive deviations between the significance and the degree of saturation of the motivation factor reveal the efforts to motivate employees with tools that they do not perceive as very important. This is the case of job security, organisational policy and employee information by management. The high level of their saturation is a manifestation of a correct and qualified approach of agribusiness management to its employees, which can be evaluated very positively. It also creates conditions for long-term employee satisfaction, but significant disproportions in meeting income expectations are a barrier to achieving this. It can be concluded that the expectations of employees and the currently applied motivational tools by management are in many respects contradictory.

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Conflict of interests

The authors declare no conflict of interest.

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ANALYSIS OF SECURITY MANAGEMENT ACTIVITIES AND ECONOMIC CONSEQUENCES OF CORRUPTION IN PRIVATIZATION OF AGRICULTURAL LAND IN SERBIA

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ABSTRACT

Security management does not make strategic decisions, but it significantly influences their decision-making by providing top management with information and assessments on the basis of which strategic goals are defined and operational decisions are made. The paper also discusses the economic consequences of corruption in the privatization of agricultural land. The subject of the paper is privatization - a litmus test that clearly shows the strength of the Government's commitment to implement comprehensive reforms, primarily due to the consequences it causes in terms of social status and, more importantly, cultural patterns and way of thinking of the population. With privatization, the new owners would very often launder the money gained from criminal activities or would be interested only in acquiring attractive real estate, but not in preserving the production program, which led to a large number of fired workers and destroyed companies.

Introduction

Observing the protective function of the state through the system of the theory of the state, according to which the state has only one function, it is logical that there is no independent function of security. Accordingly, security can be defined as one of the activities. Along with it, economic, cultural and other activities are also mentioned (Stajic, 2011: 16).

Security management is a relatively new scientific discipline that emerged as a combination of management science and security science. In other words, security

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management is the application of management procedures in the field of security (Dragisic, 2014:9). Modern security threats have made the interest in security much greater than ever in history, that is, the nature of modern security threats has imposed the need to address security issues and those organizations that have never had security in the scope of their work.

Given that corruption is a broad social problem, its consequences can have a great impact on the economic development of a country, but also on the development of the region as a whole. For that reason, the connection between corruption and the achieved level of economic development is often pointed out. This connection is mutual. The achieved level of economic development can be a factor and a cause of corruption. It can be said that poverty is one of the significant causes.

To consider corruption as the most dangerous form of organized crime, as Professor Mijalkovski states, it is advisable to keep in mind the position of the ancient Greek philosopher Aristotle, who reads: "The greatest crimes were not committed to obtain necessary, but superfluous", because corrupt people are public officials) without scruples, who abuse the indicated trust (Mijalkovski: 2012: 219).

After more than fifteen years of reforms, Serbia is practically at the beginning of the transition to a democratic society and market economy. Unlike the situation from the end of the 80's, the creators of economic policy in Serbia today have in front of them the experiences of countries in transition and the opportunity to choose those concepts of transition that have shown results.

Expectations of economic and social revival in most transition countries, and especially in Serbia, remained an unfulfilled wish, and "the process of transition, i.e. privatization as its central part, was accompanied by enormous structural disruptions, falling social product, falling employment, rising inflation, weakening state institutions, especially the judiciary through the disavowal of the law and the rise of corruption and crime." (Obradovic 2017: 41).

Privatization is a litmus test that clearly shows the strength of the Government's commitment to comprehensive reforms, primarily because of the consequences it has in terms of social status and, more importantly, the cultural pattern and way of thinking of the population. The history of privatization in Serbia, which is perhaps the most obvious confirmation of this thesis, is practically the history of the application of various models of free distribution of capital to employees, pensioners and citizens. However, the overall effects of privatization in Serbia until the democratic changes are minimal, primarily due to the lack of clear will of the then political elite in power to consistently implement reforms and transition to a market economy (Djukic, 2015: 271).

Aim of the paper

The main goal of this paper is to investigate the activities of security management and the economic consequences of corruption in the privatization of agricultural land in

Serbia, i.e. the role and importance of state bodies in combating this serious problem, and preventing negative economic consequences for state property, budget and safety of legal order and economic business of the enterprise.

The aim of this paper is to reach conclusions about the existing social problems through an institutional analysis of the concept of corruption and certain specific cases in the period of transition in Serbia, and to try to offer a solution for them.

Methodology

The application of scientific research methods (description, classification, systematization, analysis-synthesis, induction-deduction, comparative analysis, descriptive statistics, case studies, historical method, etc.) has enabled a deeper and studious understanding of the causes, manifestations and economic consequences of corruption in privatization of agricultural land, as well as the role and powers of state bodies in combating corruption in order to obtain views on proposals for improving legal regulations, work and organization, as well as an attempt to build a methodological basis for such multidisciplinary research. Therefore, the goal was realized by applying known scientific methods, in which the following prevailed: comparative method and content analysis.

Defining the term security management

The word management itself comes from the English word manage, which means managing a company or public enterprise.

Management is a discipline that can be applied to different organizations. Management applied to the company represents the management of the company or business management, management applied to educational institutions is management in education, management in the police is called police management, management in public services is public management and the like. The basic principles of science management are applied to all areas of human work, while special methods and techniques of management are applied in each special organization, depending on its specificity. The basic task of the management of any organization is to increase the vitality of the organization, i.e. its ability to survive in different circumstances, with the prosperity and growth of the organization.

The term security management, in a broader sense, means deciding on the security goals of the organizational system, ways and means to avoid adverse impacts coming from the environment or the organizational system itself, or to reduce their harmful impact (Dragisic, 2014: 14).

The management of each organization pays special attention to security as a basic condition for survival and prosperity. Different organizations have different security challenges, risks and threats, so the risks to which the state as an organization is exposed differ greatly from the challenges to which a business enterprise or cultural institution

is exposed. The various challenges, risks and threats to which an organization is exposed, as well as the responsibilities that the organization has towards the security environment, have a crucial impact on security management, i.e. the way in which security decisions will be made.

In this regard, in security organizations, special attention is paid to different theoretical sources of organization and management, as well as the possibility of applying different theories of management in solving organizational problems (Stevanovic, 2012: 51).

The way management deals with security issues, primarily depends on the overall goals of the organization. Thus, we can distinguish security management in organizations for which the provision of security services to other users is the basic mission, from security management in organizations engaged in economic or social activities and security management is in the function of preserving and growing the organization. In addition, there are companies that are of great importance for the safety of the community in which they operate, either because of the importance of their products and services for the normal life of the immediate or the wider community, or because of the dangerous forces contained in their plants and whose damage would cause great catastrophes.

In organizations that provide security services to other users, and these are, primarily, state security services, security management represent the basic, but not the only form of management, as such organizations perform a number of other functions (financial, planning, personnel, development, etc.). The situation is similar in private companies that provide security services to other organizations. The management of such companies must take into account the survival of such companies in the market, its development and growth, risks, challenges and threats that such companies face in the market, which actually makes the classic security management of any business company. In addition, depending on the level of services provided by the company, the managers of these companies participate in creating decisions related to security in other organizations, which, indirectly, makes them security managers of other organizations (Dragisic, 2014: 15). It should be emphasized that the most important decisions that determine the fate of the company are made from the managerial top, the so-called top management.

The success of operations in modern conditions largely depends on safety. Adverse security impacts that diminish the success of business organizations come from the environment and from the organizations themselves. Environmental influences range from adverse social influences, such as various political crises, wars, armed uprisings, terrorism and extremism, social tensions, etc., to natural disasters that can have a greater or lesser impact on business success. Intrusions of competition and various forms of economic subversion can range from infringement of intellectual property and copyright, spreading rumors, recruiting employees, revealing business secrets, to physical attacks on facilities where business functions are performed or on people working for that organization. The consequences of such competition may seriously jeopardize the business or completely destroy the attacked organization.

Economic consequences of corruption

Given that corruption is a broad social problem, its consequences can have a great impact on the economic development of a country. On the other hand, corruption affects economic development in the sense that it slows it down. The greater the corruption, the less opportunity for economic progress. Corruption can still in some situations "lubricate the economic machine", and that is when a bad, or the kleptocratic state administration, imposes harmful regulation and thus puts obstacles in the way of normal business. In other words, corruption is not always and everywhere a negative phenomenon. Of course, the best way to eliminate not only corruption, but also its harmful effects, is to abolish bad and harmful regulation (Begovic, Mijatovic, 2007: 105).

The consequences of corruption in any area are great. They are most often grouped into several basic ones: a decline in economic efficiency, a decline in the volume of foreign investment and the impossibility of economic development. The question is, what is the most common consequence of corruption? It seems that this is a decline in the economic efficiency of the country, because in this way, social welfare is also reduced. Instead of developing new products and providing new types of services, instead of perfecting the offer and competing with the biggest competitors, entrepreneurs are dealing with how and when to bribe. Crime is becoming an industry.

How dangerous corruption is for society and the state is best illustrated by Peter Eigen, a member of the international non-governmental organization Transparency International: "Where politics, ie the public sector and the economy, are mixed, where public and strong personal interests are vaguely intertwined, it is only a step towards corruption."(P. Eigen, 1999).

Also, one of the frequent problems that come to the fore is the threat to state sovereignty and the authority of state power, the violation of democratic values and public institutions, which ultimately harms the state system. On the other hand, in conditions of legal uncertainty and developed corruption, the interest of foreign investors in investing in those countries is decreasing. When analyzing the consequences, it should always be borne in mind that corruption may be the result of inefficient functioning of many institutions of the system, but it can also result in even less efficiency of the institutions of the system as a whole.

Analysis of privatization of agricultural land in Serbia

The accelerated privatization of the land in Serbia began within the framework of a broader process, i.e. the social and property transformation from a socialist to a capitalist social order. Privatization was most often presented as the best solution for the economy, which was damaged by the civil wars in the former Yugoslavia in the 1990s, looting carried out by the then ruling regime, sanctions by the international community and the NATO bombing in 1999. With privatization, the new owners would very often launder the money gained from criminal activities or would be interested only in acquiring attractive real estate, but not in preserving the production program, which led to a large number of fired workers and destroyed companies.

The government formed after the parliamentary elections in May 2012, began the process of reviewing privatizations and arrests of responsible persons, which in a way officially recognized the criminal aspect of that process, which the public has been pointing out for years. However, the responsibility of the competent institutions, which is primarily reflected in the fact that they did not control the origin of the money that entered the legal flows through privatization, or whether the new owners maintain the continuity of production, has not yet been examined.

Although there was no basis for that in the then valid Constitution, the privatization that began in 2001 first *de facto* abolished social property, as a specific feature of Yugoslav communism until then. Social property was created by working or investing part of the salaries of employees or cooperatives and thus de facto emerged as cooperative, "but for political and legal reasons it was managed as social property" (Gulan 2012: 25). The 2006 Constitution defines a social property in this way, both agricultural enterprises and socially owned land became the subject of privatization. Privatization left drastic consequences in this case as well: in 253 privatized agricultural enterprises over 65,000 agricultural workers were laid off, more than 400,000 hectares of state and cooperative agricultural land have been transferred to private hands, and about 60 contracts, or one in four privatizations, have been annulled. In the process of privatization of agricultural enterprises, numerous illegalities have been committed in state and cooperative ownership, vaguely defined regulations regarding land ownership (Djukic, 2016: 285).

Privatization of agricultural companies and combines such as "Ratkovo", "Srpski Miletic", "Backi Brestovac", "Zmajevo", "Backi Maglic", "Lovcenac", "AK Subotica", "Mali Idjos" and others, the Agency for privatization did not determine what constitutes the capital that is the subject of the sale, nor did it allocate state and cooperative agricultural land during the sale. In that way, after the privatization in the Real Estate Cadastre, the buyers changed the form of ownership, i.e. the registration of private ownership on cooperative and state property. The Real Estate Cadastre Service of the Republic Geodetic Authority, on the basis of sales contracts and certificates from the Agency of the price paid, changed the form of ownership from public and cooperative to private property (Djukic, 2015: 286). It is obvious that the Privatization Agency did not legally validate the privatization of agricultural combines, i.e. companies, because it did not determine whether they have the right to use agricultural land that was in public and cooperative ownership. In that way, the land was not excluded from his property before privatization. Such a change in the form of ownership had no legal basis, because the contract on the sale of social capital transferred only the social capital of the subject of privatization, while only the right of use could be obtained on the state and cooperative property, but not ownership, because legal predecessor had none either. In addition, the Privatization Agency did not sufficiently provide measures for the protection of the property of the subject of privatization, timely control of the execution of sales contracts, through contracts concluded in privatization. This led to the collapse of those companies, the dissatisfaction of the workers, the reduction of the company's assets, the closing down of all or some parts of the company. The contracts were terminated

only when the property of the subject of privatization was completely devastated. All this indicates that the privatization of agricultural enterprises and combines has not been well implemented, i.e. that privileged individuals have been enabled to acquire real estate, especially land under extremely favorable conditions.

As the extent of this appropriation in cooperative and state ownership is not known, the Anti-Corruption Council sent a request to the Privatization Agency to provide information on the total number and names of agricultural enterprises and plants that were privatized, on the total land area owned by privatized entities, about the status of property owned by agricultural enterprises and combines at the time of sale, the amount of the purchase price as well as whether the price shows the value of agricultural land. The Agency did not submit all the requested data to the Council with the explanation that it would submit them in a later period. (Report on state and cooperative land in the privatization process, Anti-Corruption Council, 2012). The Council also recommended to the Agricultural Land Administration of the Ministry of Agriculture to obtain from the Republic Geodetic Authority and the Cadastre Service of certain municipalities where real estate is located, data on changes in cadastral conditions on that land after privatization, as well as changes in state and cooperative ownership, so it could be determined whether the registration of property rights on state and cooperative property to the buyers of social capital was performed, on the basis of the privatization contract, and whether the registration changed the form of ownership.

The legal basis for the transfer of state, cooperative and even social property is also debatable. "Thus, for example, there are opinions that agricultural land as a public good of public interest could not and cannot be the subject of privatization." (Popov, 2013: 35). Namely, lands in the state and cooperative ownership have their owner, and agricultural combines had only the right to use it, but not the right of ownership that they could transfer to new owners. However, in the period of self-governing socialism, cooperative property was transformed into social property, and with the renewal of cooperatives, its legal status was largely not restituted, so it was treated as social in the privatization process. The situation is similar to social property, which was an expression of the socialist socio-economic order of the institute *sui generis* and abolishing the factor of alienation of the working class from the means of production, so in the earlier philosophical-ideological concept its privatization would be heresy. To make this legal nonsense even more complex, the concept of privatization is contrary to the basic legal principle of derivative, translational acquisition of rights - *nemo plus iuris ad alium transferre potest quam ipse habet.* (Avramovic N., Stankovic M. 2020: 1034).

Serbia has pledged to allow foreigners to buy agricultural land four years after the entry into force of the Stabilization and Association Agreement (SAA) with the EU. By August 2012, all EU member states except Lithuania had ratified the SAA with Serbia. For the Agreement to enter into force it must be ratified by all member states and that such an unfavorable deadline for the sale of land agreed in the interest of tycoons who want to sell land they bought cheaply in privatization to rich foreign corporations as soon as possible, based on a large difference in prices of quality land on the Serbian

and European markets ((Freedom Movement, Workers 'and Peasants' Organization, Transparent Institute-TNI, 2013). Many countries in the region have agreed on a much longer deadline after which the sale of land will be allowed, while some have banned the sale. The privatization and consolidation of land owned by a small number of people who come to the land very cheaply aims at market speculation with the land (Gulan, 2012:26).

Analyzing the ownership of agricultural land in Serbia, we can conclude that the largest Serbian landowners together have more land than the area of individual countries or cities. Only the four largest Serbian owners own more than 100,000 hectares of land, and they are individually stronger than the largest European landowners. At the very top are the owner of the "Irva Group" with nearly 30,000 hectares, the owner of "Delta" with 25,000, the owner of "MK Komerc" who owns 24,000 hectares in Serbia, and the owner of the meat industry "Matijevic" with 16,000 hectares. Far behind them, for example, is the "Victoria Group" with about 6,000 hectares. However, it should be noted that all this land is not owned by them, but a good part was leased from the state. Because, when they bought combines, they contained a part of the state land that remained with them to cultivate (produce). However, their "ranches" are larger than the state of Liechtenstein, which has an area of about 160 square kilometers or 16,000 hectares. They are individually larger than Novi Sad, which has an area of 235 square kilometers or 23,500 hectares. This, however, only applies to the land they and their companies bought. But there is also land bought by their close associates and family members (Anti-Corruption Council Report, 2011).

Although the Law on Agricultural Land prohibits the sale of agricultural land to foreign persons, with the privatization of agricultural companies, foreigners, by registering their company as domestic, have already become owners of agricultural land in Serbia. Thus, IT, the Croatian tycoon and the owner of "Agrokor", bought "Frikom" and reached another 1,000 hectares, and with the "Diamond" oil mill, another 4,200 hectares. He cultivates a total of about 6,000 hectares. The Hungarian company "Hajdu Avis" from Debrecen bought an agricultural property "Sloboda "from Perlez with 1,500 hectares of land owned, and after four years resold it, of course with a profit. The Irish fund "Baltic Prosperite" caused a lot of noise in the public when it bought agricultural goods "Panonija"(near Backa Topola), PIK "Feketic" and "Vojvodina" from Backi Brestovac. By buying shares in these three factories, the company from Ireland got the right to manage 10,500 hectares. The first foreigner to discover that if you establish a company in Serbia you can buy agricultural land (unofficially) is Andrew Hunter , who bought "Jaksicevo" in Srpska Crnja in 2005, with 1,000 hectares for 245 million dinars through the company "Cornwell" (Djukic, 2016: 288).

Table 1. The largest owners (foreigners) of agricultural land in Serbia

OWNER - COMPANY	AREA IN HECTARES
"Agrokor", "Frikom", "Dijamant"	6.000
"Hajdu Avis" - Debrecin, Hungary	1.500
"Baltik prosperite"- Ireland, partner with: "Panonija", "Feketic" i "Vojvodina"	10.500
"Kornvel" - Endru Hanter, partner with "Jaksicevo"	1.000

Source: Anti-Corruption Council of the Government of the Republic of Serbia.

For example, in Denmark you cannot become a landowner if you do not have a certain level of education and proof that you have lived in the villages for 25 years without interruption (Gulan, 2010).

After the agrarian reform carried out in Yugoslavia after the end of the Second World War, which set a maximum of 10 hectares of land, and the rest of the nationalized country was given to agricultural cooperatives and combines, the process of transition and privatization, which in Serbia was controlled by the World Bank and other international institution, land becomes only one of the potentials for profit generation through export-oriented intensive industrial production on large land areas. Although accelerated industrialization after the Second World War, significantly reduced the rural population and led to its large migration (when 8 million people moved from villages to cities in the SFRY in half a century), in the current period of high unemployment and deindustrialization caused by privatization, the state should protect agriculture and its potentials in creating a sovereign, self-sustaining society in the interests of large and multinational capital. In the period of economic sanctions in the 1990s, the importance of agriculture in providing the basic living needs of the population came to the fore. According to research by UNICEF and OCHA (UN Office for the Coordination of Humanitarian Affairs), the mortality rate at the time of the sanctions did not increase significantly, primarily due to domestic agriculture and pharmaceutical production, thanks to which Serbia was not dependent on imports (Economic sanctions, Health, and Welfare in the Federal Republic of Yugoslavia, 1999-2000). As the Serbian pharmaceutical industry was almost completely destroyed in the privatization process, and agriculture became a field of big capital speculation, it is clear that the privatization process is fundamentally deeply directed against the interests of the population to ensure its existence through creating a sovereign, self-sustaining society (Djukic, 2016: 290).

The former president of the Anti-Corruption Council, the late Verica Barac, characterized the privatization process and the role of international institutions with the following words: "The law on privatization was made according to the concept of the World Bank and is based on the ideas of liberal economy. Institutions, property, process, and the origin of money are not important, only privatization is important. Through the privatization of socially-owned enterprises, more than 400,000 hectares of state and cooperative agricultural land have passed into private hands." Although by law, agricultural land cannot be privatized, through the registration of state and cooperative

land as socially owned, hundreds of hectares of high-quality agricultural land ended in private hands. This was done by keeping the cooperative agricultural land as socially owned, although according to the Agricultural Land Act of 1992 and 1997, the entire land had to be transferred from social to cooperative ownership before privatization. Land in ownership of cooperatives presented as social property was sold, and these privatization programs were approved by the Privatization Agency, and thus, according to some data, 214,105 hectares of cooperative and more than 200,000 hectares of state land disappeared. An illustrative example is "Ratkovo", where 160 hectares of state agricultural land are reported and the official data of the Republic Geodetic Authority say that there were 413 hectares (Djukic, 2016: 291).

When it comes to the privatization of the largest and most important companies and agricultural land in Vojvodina, the buyers of agricultural plants and land were in some cases controversial businessmen's, and as in other cases in the privatization of agricultural land, the Privatization Agency and other state institutions did not have check of any kind, as well as the origin of the money when buying agricultural plants and cooperatives. In this context, we will mention the companies that were privatized in Vojvodina, namely: "Mladi borac", "Jedinstvo" from Gajdobra, "Backa" from Sivac, "Agrobacka" from Bac, "Zobnatica" (near Backa Topola), etc. A glaring case is also the privatization of the company "Mladi borac", which was bought for only 32 million dinars (36,000 euro), in six annual installments, with 360 hectares of land. Also, we cite the example that the company "Backa" from Sivac was privatized for 85 million dinars, with 37,000 hectares of agricultural land, under the irrigation system and with infrastructure facilities (Anti-Corruption Council Report, 2011).

Table 2. Privatization of agricultural combines in Vojvodina

OWNER - COMPANY	AREA IN HECTARES
"Zobnatica" - near Backa Topola	2.650
"Backa" - Sivac	37.000
"Jedinstvo" - Gajdobra	1.300
"Agrobacka" – Bac	900
"Mladi Borac"	360

Source: Anti-Corruption Council of the Government of the Republic of Serbia.

The privatization of one of the best and most modern agricultural combines in Serbia, "Zobnatica", is very characteristic, so we will stick to this example. Namely, Belgrade Stud Farm "Zobnatica" near Backa Topola, it has existed for almost two and a half centuries and was valid for one of the most famous in this part of Europe. The agricultural estate of the same name was founded in 1945. It spreads over 2,650 hectares, its own and leased land has a pig farm, a slaughterhouse, a hotel with 20 double rooms and three suites, as well as two hotel restaurants with 350 and a chard with 400 seats. They are engaged in fish farming, catering and tourism. They have a

hippodrome, sports fields, a museum of horsemanship and a stable with 75 horses. There is also a hunting ground of 2,537 hectares. Fans of sport fishing have at their disposal a lake of 250 hectares. At the time of privatization, there were 151 workers, and at the end of last year, 114 employees and business income of 389,411,000 dinars. The first sale of social capital in "Zobnatica" was on April 11, 2008. Five potential buyers participated in the auction, because the ad did not provide for qualifying conditions. The starting price was 161 million dinars (1.8 million euro), and the largest was offered by the NB (21 million euro). The second place with about 20 million euro is the Consortium of natural persons whose representative is V.S., and the third place is Zrenjanin's "Dijamant". According to the daily "Press", the state stopped the sale of NB, because the Administration for the Prevention of Money Laundering connected it with Lj.B. Namely, Hypo Alpe Adria Bank allegedly received an instruction from the Administration for Money Laundering not to participate in this transaction. The next day, the NB accused the bank of "unreasonably refusing to execute an order from its accounts and pay the Privatization Agency." As the buyer did not pay within eight days, the Agency terminated the contract, without giving a subsequent deadline, which was a legal obligation. The second place was taken by the Consortium of natural persons whose authorized representative V.S. did not respond to the invitation to sign the contract. It was speculated that behind the consortium was a controversial businessman (Djukic, 2016: 293).

"In the second advertisement, qualifying conditions are set, from which it is clear that the sale is set for a certain buyer," claims the Anti-Corruption Council and reminds that "Zobnatica" is a company whose main activity is agriculture and animal husbandry. However, in addition to that, the advertisement asked as a qualifying condition that the potential buyer must be a hotelier who owns a 4-star hotel (absurd that it cannot even have five stars). The Privatization Agency explains that it decided on qualifying conditions at the second auction due to the importance of the company, its activities, business success and location, and that such importance did not exist at the time of the first auction, which was held only six months ago. The consequences of the qualifying conditions set in this way were to eliminate competition, eliminate all potential buyers from the first auction and create opportunities for only one buyer to appear. "Zobnatica" was sold for a much lower price than the bids at the first auction, although the starting price was the same, around 1.8 million euro. The price of 1.8 million euro is unacceptably low, because the property at the end of 2006 (two years before the sale) is estimated at eleven million euro. There are 2,650 hectares of agricultural land in "Zobnatica", with the fact that, according to the Agency, the buyer cultivates 1,360 hectares, and the rest of about 1,000 hectares are leased to individuals. In addition to the land, there are about 163,000 square meters of office space, which includes a hippodrome, a pond, and numerous facilities (Anti-Corruption Council Report, 2011).

As the only participant in the second auction, the Consortium (PH from Greece and "New Company" from New Belgrade) bought 70% of the social capital at a starting price of 1.8 million euro, which is the same as the investment program. The Greek is

an authorized representative of the Consortium with a share of only 5%. The founder of "New Company" is the offshore company "Northgate Finance" in Liberia. The Privatization Agency did not ask the Administration for the Prevention of Money Laundering to check the origin and flows of money. The Agency performed control of operations in the first year of privatization, and determined that business continuity was not ensured, because the realized income after privatization, they accounted for only 16.93 percent of revenues in 2008 (Anti-Corruption Council Report, 2011). With repeated control, three months later, the Agency again determined that the buyer does not meet the agreed conditions. And in addition to non-fulfillment of obligations, the contract was not terminated, but new deadlines were provided, they claim, according to the Anti-Corruption Council (Djukic, 2015: 294).

With the new owner, losses also arrived, so after the privatization, a loss of around 150 million dinars was recorded, which was made by the majority owner. On several occasions, in the first two years, small shareholders claimed and asked the state authorities to investigate all the circumstances of the privatization, but that question remained unanswered.

Conclusion

Understanding the importance of security for business success is a prerequisite for the development of security management, whose goal is to provide security to the community, especially important in the period of transition.

In the period from 2000 to 2009, Serbia was ruled by democratic political and financial elite. According to unofficial data, it is estimated that a total of about 128 billion dollars came to the country from abroad in that period, which is about 13,000 dollars per capita. Although this amount seems high, it obviously did not affect the growth of the real sector, and the population of Serbia did not seem to notice that money. The situation in the country is such that the real sector was practically destroyed through privatization, instead of, as the proponents of privatization methods claimed, going through a period of stagnation, and then started to grow. Declaratively, privatization was aimed at strengthening the economy, employment and income growth. Realistically, it served for a speculative redistribution of goods.

The disputed privatizations of agricultural land soon became the subject of investigation by the competent prosecuting authorities and, given the wide range of participants with the participation of responsible persons from some state institutions, a serious social problem awaiting a response from the judiciary. Deficient privatizations in agriculture thus followed a series of 24 disputable privatizations pointed out by the Anti-Corruption Council of the Government of the Republic of Serbia, which became the subject of interest of the European Parliament with a request for revision, based on suspicious reasons for termination of sales contract.

Based on that, members of the working group of the Criminal Police Directorate, Ministry of Internal Affairs, arrested officials and officials in the Privatization

Agency, on suspicion that they participated in abuses during the sale of the company "Tehnomanija" and other companies. The criminal report also covers the former director of the Privatization Agency, who was also arrested for illegal sale of the "Port of Belgrade". In addition, the police and the prosecution filed other criminal charges and undertook other activities within their jurisdiction, in connection with the aforementioned disputed privatizations (Djukic, 2015: 291).

Privatization of companies in Serbia was certainly one of the biggest sources of corruption in our country. Out of a total of 2400 privatizations that were carried out in the mentioned period, 1070 ended in bankruptcy, and 620 privatizations were annulled, i.e. a quarter of the proceedings. The largest number of contract terminations took place in the period from 2008 to 2010. Although it was a reaction of the state to the illegalities, the annulment of privatization was not a useful reversible procedure that brings a return to the previous situation, because those companies in a short period of private ownership were further ruined by extracting capital and tunneling it to other companies. In such a situation, no one needs these companies anymore. The private sector does not want to buy them, and for the state they represent only an additional burden. Although Serbia is the regional leader in annulled privatizations, those owners can be counted on the fingers of one hand (but also those who enabled them to buy companies for small money and quickly ruin it), who had to be ruined and emptied due to non-compliance with the law firms return to state skirts. Not only the 24 privatizations that are being investigated at the request of the EU are disputable, but also about 600 other cases in which the state terminated the contracts, but unfortunately, as it has already been said, in most cases it was done too late. Such an approach brought us to the moment that the entire state was threatened by such privatization. Of all the privatizations, agricultural companies in Vojvodina went through the worst in that process. Laws that favored tycoons and classic examples of corruption left the state without 400,000 hectares of arable land, and the number of employees on agricultural lands was reduced more than ten times. In each of these cases, the same scenario of ruin was applied. Since, according to the law, they could not sell more than ten percent of the property, loans were taken that were not repaid, and the companies went bankrupt. This has been done for years, and the state generally observed it silently and reacted only when everything was over (Djukic, 2015: 273).

Conflict of interests

The authors declare no conflict of interest.

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ORGANIZATIONAL RESTRUCTURING AS A WAY TO RESOLVE THE CRISIS CAUSED BY COVID 19, IN AGRICULTURAL SECTOR

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ABSTRACT

The crisis, as a negative deviation that is serious and can jeopardize the company's business usually doesn't occur suddenly, but gradually in individual areas, accumulating its effects. The crisis caused by the pandemic came suddenly and immediately caused a disruption of economic activities, without the possibility to predict and prevent it. It hit the agricultural sector with great intensity. The analysis of the business entities in agricultural sector in Serbia has shown that these entities suffered great damage and that it is necessary to take restructuring measures as soon as possible, primarily organizational ones. The results of the research showed that the crisis caused by COVID 19, mainly affected the entire long chain of participants in agriculture. Government measures, which included providing financial support and subsidies, are certainly welcome but not sufficient. The authors concluded that it is therefore necessary for companies to implement restructuring measures in order to ensure a speedy recovery.

Introduction

Restructuring enables the company to overcome the crisis in business, which it enters after a significant decline in economic activity. In this case, the restructuring has its so-called. "regenerative" role. It can also be described as "forced" restructuring or restructuring that prevents bankruptcy, caused by a business crisis that threatens management to lose the control mechanism (Cico, 2018). Organizational restructuring

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is only one of the models of restructuring, but it could be considered as the first, which is commonly applied in the transformation of crisis-affected business. The business crisis should be seen as a state of emergency, which is considered undesirable and which contributes to long-term discontinuity and disruption in business, and not just the current, short-term decline in the company's economic activity. Examining the definition of business crisis in the literature, it can be concluded that there is no single and generally accepted definition. However, some of them indicate that the business crisis in a somewhat narrower sense can be understood as a process in which, unplanned and undesirable, the set basic economic goals of companies are endangered, such as the goal of preserving invested capital, the goal of profit (profitability) and the goal of preserving liquidity and solvency (Malinić, 2020). As such, the crisis is the final stage of an undesirable situation, during which the basic indicators of success develop unfavorably, which calls into question the survival of the company. Such a situation can certainly be observed in the crisis caused by the Covid-19 virus, when the World Health Organization declared (WHO) it a global pandemic, comparing it with natural disasters, with numerous health, social and economic implications (WHO, Coronavirus Disease, COVID-2019, Situation Reports 2020). Due to this phenomenon, many countries have declared a state of emergency, which has even caused the ban on the work of certain economic sectors, including agriculture, all with the aim of reducing and restricting the movement of people.

Agriculture is the primary branch of the economy, present in all economic and political systems that accompany people, in all regions and climatic zones. The activity of agriculture, even in the most developed countries of the world, in addition to the factors and phenomena created by people, is determined by the conditions created by the forces of nature. Agriculture has a dual role: it needs to find a way to produce quality food for the population and at the same time take care of nature while preserving biodiversity. Ecologically sustainable agriculture that uses natural resources wisely is essential for food production and the quality of life of people. For all that, agriculture needs a material basis and permanent acquisition of new knowledge all the time of business.

Serbia is traditionally an agrarian country in which agricultural activity is performed through agricultural farms. According to the official data from the 2012 agricultural census (Agriculture in the Republic of Serbia I 2013; Agriculture in the Republic of Serbia II 2013), there are 631,552 agricultural farms in Serbia that cultivate a total of 3,861,477 ha of land. Out of the total number of agricultural farms, 628,555 are family farms, and 2,567 are companies, cooperatives, entrepreneurs and farms in private and state or owned by churches and religious communities.

The agribusiness sector is a very important part of the economy in Serbia. This sector produces food for people, significantly affects the environment, has a large share in GDP, which is why the state has a great interest in the good business of economic entities in agriculture.

The development of agriculture also depends on external influences, which are also

constantly changing. Currently, the crisis caused by the COVID 19 virus pandemic, the most significant external impact on agriculture in Serbia and around the world. The basic question that arises in these conditions is the issue of resolving the consequences of this crisis, which affects the world economy, the economy of each country, specific sectors, including agriculture and all economic entities, the state and the population.

In this paper, the authors tried to show the importance of organizational restructuring of these companies, through empirical research of the results of the work of companies in the field of agriculture, in order to ensure survival and sustainable business. The authors point to changes in the future business of this economic sector, which have to certainly undergo significant changes. The crisis has shown the key role of agriculture as well as the social, health and economic consequences that occur when the free movement of people, goods and services are limited or even completely disabled (European Commission, Brussels, 2020). The author's research also seeks to find an answer to the question: can an adequate model of organizational restructuring be determined for such business entities or does it differ from business entity to entity?

What changes need to be made in these business entities: will it be a reorganization with or without the abolition of organizational units, various programs to reduce the organization, reorganization after status changes and acquisitions, etc. (Rajnović & Cico, 2019). According to some research (Probst, 2003), it is possible to distinguish three basic categories of organizational restructuring: reorganization, downsizing and mergers and acquisitions, each of which has its own specifics.

Business crisis, causes and possible solutions

Business entities are exposed to various risks, which are often stated to represent negative deviations from a certain plan. A crisis is a negative deviation that is serious and can jeopardize the very survival of a company (International Finance Corporation, 2010). In the literature, the word crisis is found to be etymological (of Greek origin) and means "judgment" or "decision", i.e. a crucial moment for a decision on further positive or negative development of the situation. The notion of crisis has changed over time. Some authors define the crisis as a situation in which there is a danger of high intensity (Smart & Thompson & Vertinsky, 1978), some as the existence of an existential threat to the company (Milisavljević & Todorović 1991). The crisis is a consequence of poor financial results and management decisions, and resolving the crisis requires adequate and timely decisions.

The analysis of the genesis and characteristics of the crisis, global or regional, emphasizes the importance of the process of economic and financial stabilization. All circumstances and characteristics that change dynamically from day to day form a new business environment (Rajnović & Cico, 2019).

Observing the impact of the Covid-19 virus pandemic as the cause of the global crisis, it is noticed that this crisis not only affects human health, but also affects the social and economic aspect of life. This crisis is affecting all countries and many business sectors,

completely changing the way people live. This crisis was caused by an external cause, and it has a great impact on the business of companies. External causes can cause great damage and be extremely dangerous if they are long-term. The consequences of this crisis appear as unfavorable trends and changes in demand, as a cyclical decline, which depends on the movement of economic cycles, especially in times of crisis, which includes the outbreak of the global economic crisis and the creation of a new world order. Although the current crisis could not be predicted, certain predictions related to 2020 indicated a slowdown in the economies of leading countries and a slowdown in global economic flows in general.

Organizational change

The crisis caused by the pandemic has called into question many things. The impact of COVID-19 is multidisciplinary, influenced both in the field of medicine and in the social fields, has the impact on the environment, agriculture, transport, tourism, the entire social and global environment. We can say that the crisis caused by the pandemic is a new cause of the crisis, but at the same time it is the initiator of certain other patterns of the crisis, which include: management, the need to change the financial policy, the organization of the company becomes inefficient, unfavorable trends and changes in demand, especially in certain economic sectors, which due to the nature of activities are most affected by the new situation.

A possible measure to overcome the crisis in business is certainly restructuring, primarily organizational, through the division of companies or mergers with parts that have a chance for development, with the elimination of parts that make losses association of smaller family farms to reduce costs. Then it is possible to sell parts of the company in order to reduce losses, and there are financial resources that encourage cash flow in a healthy part of the company. In crisis conditions, companies can be merged with other economic entities, and even key creditors, outsourcing, reorganization of the organizational structure with additional training of a certain number of workers, reduction of hierarchical levels of management, downsizing, reducing the number representative offices, abolition of certain sectors, rationalization of distribution (Rajnović & Subić & Zakić, 2016).

Business entities are constantly exposed to influences, either externally or internally, which require certain changes in the company itself, which can be partial, when only certain parts are changed, i.e. functions, or all-encompassing, global (radical) ones that actually represent organizational transformation. They are implemented by changing all elements of the organization: system, structure, process and culture (Cico & Munikravić, 2017).

The term reorganization is often used as a major discontinuous changes for organizational transformation. Such changes lead to the creation of new models of organizations (network, matrix, virtual, etc.) and are focused on several activities aimed at changing the organizational structure. Such changes include reengineering, downsizing, outsourcing. These are major changes that require changes in a number of

parameters, large-scale and in the short term (Erić & Stošić, 2013).

The crisis caused by the corona virus is unique in the modern history of economic trends, and because of that it is burdened with numerous uncertainties. Since there is no previous experience, a this crisis is considered atypical. Many countries have adopted measures called lockdown, which certainly hint at a recession. Unlike the Great Depression of 1929-1933. and the Great Global Recession (2007-2009) caused by a fall in aggregate demand, this shock of the pandemic caused a fall in both aggregate demand and aggregate supply. Demand has been reduced, by reducing all its components: household consumption, economy, investments and capital expenditures of the state. On the aggregate supply side, the reduction is even greater because some companies have drastically reduced their work or suspended it completely (due to quarantine closure) in order to maintain social distance (World Economic Outlook: The Great Lockdown, IMF 2020), and the losses of these companies are significant. For these reasons, organizational changes of companies, which are most affected by the crisis, must be implemented in a short time, because only those who react quickly in these circumstances can ensure the continuation of their business.

Forms of applicable organizational restructuring

Defining and establishing new company goals that follow changes in the environment and formulating a strategy that follows the newly set goals cannot take place without constant changes in organizational forms (Herber, J., Singh, J.V. and Useem, M. 2000).

The goals for implementing organizational restructuring are to do a company more efficient and effective in its business. The following forms of organizational restructuring are most often applied in practice (Handy, 1995):

Outsourcing - Outsourcing is a form of organization in which the relocation of business outside the organization, where certain activities in the company are performed by other companies. It is only a matter of choosing which activities to entrust to others. Some companies tend to keep jobs from the core business and entrust all side activities to others, somewhere it is the case that companies tend to be a kind of virtual organization in which almost all activities would be outsourced and management would deal with business policy. This allows for a significant reduction in costs, but it is necessary to look at it carefully and take into account the costs that can really be eliminated. Time is essential for the implementation of restructuring, especially in times of crisis, and outsourcing can be implemented quickly and, most importantly, savings are provided in a short period of time.

Downsizing - Downsizing is a change in the size of an organization and a reduction in the number of hierarchical levels. Planned abolition of certain jobs or positions, taking care that the reduction is not in the control sector, which must still be effective.

Reengineering - It is a process that implies major business (strategic) and technical changes. Radical changes and complete redesign of business processes are being made in

order to improve the company's performance: costs, profitability, revenue, turnover, etc. Reengineering enables the reduction of the number of employees, especially the middle level of management, by introducing automation that is not very complete. The essence of reengineering is to merge more and more jobs into one, looking for new solutions in the work in order to enable that. All this leads to the simplification of doing business.

Network organization - Network organization implies the creation of a network of independent organizations that are physically dislocated but still connected by common affairs and resources. It is conducted either through an internal or external network. The internal network is created by regrouping and redistributing jobs into organizational units that actually take the form of separate companies, separating individual parts into separate units facilitates business and influences the attraction of investments for parts that function better. An external network is created when a company transfers activities from its business to other persons, who have the opportunity to do so more professionally, faster and at lower costs. The company that assigned the activities retains control, and helps other members of the network with technological, IT and resources.

Learning organization - In business management, a learning organization is a company that facilitates the learning of its members and continuously transforms itself. This enables them to remain competitive in the business environment.

Strategic alliances - Alliances are actually forms of connecting different companies into a structure that is adaptable and dynamic, building medium-term and long-term relationships to achieve their goals that share the costs, risks and benefits.

Virtual organization - In this form of organization, there are structures where people are connected by partnership, networking, cooperation. Instead of a formal structure, where people are physically present, these are dislocated cadres who do not even know each other. Virtual organizations use mental and technological constructions to represent certain aspects of the organization that traditional organizations possess physical existence. There are common characteristics of this organization: lack of physical structure, communication-basedness, mobility, hybrid forms, lack of formal boundaries, flexibility and sensitivity (Warner & Witzel, 2004).

Materials and methods

Information and data used for research in this paper, which refers to the impact of the crisis caused by COVID 19, on business entities engaged in agricultural sector, were obtained during a detailed interview with 61 respondents, on public data, on financial performance of companies, analysis of legal regulations in Serbia and practical examples.

For the purpose of research on this issue, the authors conducted a survey in which 61 respondents participated, of which 32 family farms in the vicinity of Ruma that cultivate less than 50 ha of arable land and 29 agricultural enterprises in Vojvodina. The research was conducted in the period from March to December 2020.

The analysis of the research showed that the largest number of companies immediately

applied some measures of organizational restructuring, most often the reduction of the corporation, outsourcing, then the reduction of costs and the reduction of the labor force. These measures have somewhat mitigated the damage caused by the crisis.

Family farms were to a lesser extent in a situation to apply restructuring measures, because they did not have the possibilities for e.g. with the reduction of labor, fuel costs, part of the vegetable goods perished permanently, but some of them diversified their activities to a lesser extent.

To provide objective results, the following methods were used to collect and evaluate relevant information:

- data obtaind during detailed interview and the rest mentioned sources, which show that the observed cases can be taken as a typical case, which indicates the possibilities of resolving the crisis in companies by applying restructuring, and above all, organizational restructuring,
- the comparative method enabled the authors to come to generalizations or new conclusions by comparing the same or similar phenomena or by establishing similarities and differences between them,
- the synthesis method was used in the end, to summarize the conclusions at the global level as well as at the level of Serbia, with recommendations for the implementation of organizational restructuring measures in order to resolve the crisis as soon as possible.

From the analysis of all collected data, it was noticed that there are possibilities for resolving the crisis in the business of companies by applying organizational restructuring measures.

Results and discussion

The authors looked at the crisis in the business of agricultural sector in Serbia, from the point of view of the latest global crisis, which occurred with the appearance of the COVID 19 virus.

The results of research showed that: 1) the impact of COVID-19 of Serbian agricultural sector was mainly reflected in several aspects as crop production, agricultural products supply, livestock production, farmers' income and employment, economic crop development, agricultural products sales model, leisure agriculture development, and agricultural products trade; 2) The measures of government which included resuming agricultural production and farmers' work by providing financial support and providing subsidies were not all in line with the order of impact, which indicates that more-tailored policies should be implemented to mitigate the influence of COVID-19 of Serbian agricultural economy in the future.

To control the rapid spread of COVID-19, cities and countries are gradually locked down, and citizens have been quarantined globally. A series of emergent control

measures, such as shopping centers lockdowns, transportation control, closure of farmer markets, have been adopted immediately throughout the country during the first two months. These measures definitely have had a tremendous impact on Serbian agricultural. Therefore, empirically investigating the impacts of COVID-19 on Serbian agricultural and exploring the Serbian government's emergency measures to ease these impacts are a prerequisite to the ongoing battle against COVID-19. It can assist policymakers in formulating effective policies but also can provide solution for the prevention similar situation in the future.

Agriculture sector has become financially unsustainable due to measures taken by states due to the outbreak of the COVID 19 virus. The activity is very endangered because it is labor intensive (relies on people as perpetrators) and works with people who work together in the field, prepare agricultural products for sale, perform transport, all of it in a limited space, which is considered insufficient to maintain the prescribed distance between people, in case the capacity of the business space, which is commonly used. Agricultural sector faces the application of distance measures because there is an increased risk of infection in it. Too low demand threatens the financial sustainability of the business (Horcher & Singh & Graham, 2020).

The market chain in agriculture is complex, it consists of a long chain of participants which (among others) consists of producers of fertilizers, seeds, pesticides and other inputs for agricultural production, agricultural producers, mechanization, logistics, warehouses / refrigerators, processing industry and only finally retail chains and other outlets selling these goods to consumers. If a problem occurs in any part, the product stops or slows down on its way to the consumer. Stabilizing agricultural production and products supply is an important means of guaranteeing people's livelihood.

Agricultural sector was facing a huge financial instability that has not been recorded in recent history. Based on the results of the author's research, the problems coused by pandemia in agriculture relate to:

- decline in demand due to isolation measures, online work, market closures. All this has caused a negative attitude towards public markets, and the belief of users that there is a high risk of infection, which continues to this day and will continue after the measures are relaxed. The structure of demand has changed, so the segment of the so-called luxury foods have already felt the effects of the corona virus, e.g. expensive alcoholic beverages and top delicacies because in this situation, consumers buy only basic groceries,
- control measures applied when buying agricultural products in supermarkets, shops and markets, wearing protective masks and mandatory keeping distance, with the possibility of filling the capacity of points of sale up to several people,
- increase of certain expenses (purchase of hygienic equipment and application of hygienic measures, installation of barriers in markets),
- lack of public funds to subsidize agricultural sector to the appropriate extent,

- impossibility for business entities to reduce certain costs, most of the operating costs remained and they do not depend on the quantities of goods produced and sold, because they can not be changed quickly, e.g. fixed costs (Horcher & Singh & Graham, 2020). Since these costs for most entities will not be covered by revenues, which makes the situation very difficult for those that are financed exclusively from their own revenues and can lead to bankruptcy,
- spring plowing preparation is the basis of obtaining sufficient food supply and is the priority work in spring. Farmers must start spring plowing in time possible to avoid agricultural income loss. This is not only hurting the welfare of people whose revenue is mostly relying on agriculture, but also affecting the stability of food supply. If the spring plowing is delayed by COVID-19 in 2020, the production will be reduced. According to a survey a lot of seed enterprises have not produce nor sold enough seeds after the outbreak of COVID 19. The crop production materials were difficult to available villages due to the lockdowns. Therefore, the shortage of crop production materials has become one of the main obstacles in agricultural production during the outbreak of coronavirus,
- limited by the movement of people, many agricultural enterprises could not do the necessary work in time during the spring sowing,
- isolation measures have disrupted much of the country's food supply chain. The specific effect was as follows: on the supply side, products were not sold, raw materials could not be procured in sufficient quantities, transport of agricultural products was not adequate, and then supply was reduced; on the demand side, households with uncertain incomes and limited access to supermarkets reshaped their demand by purchasing the most necessary goods and with longer shelf life. The overall market demand for agricultural products has declined compared to regular seasons,
- farmer's income had severely affected by COVID-19 on two major components: wage income and agricultural income. Rural workers could not work from home. The closure of workplaces and the transportation restrictions force farmers to stop working. Due to quarantine and transportation restrictions, farmers' local agricultural activities couldn't continue, and the agricultural products couldn't be sold, which indicated a radical decline in agricultural income for the entire year,
- the crisis has severely affected the sale of vegetable crops as a basic agricultural product for citizens. First, due to the lack of agricultural production materials and transport restrictions, continuous vegetable production has become impossible, and large quantities of vegetables that are ripe and yet to ripen could not be sold normally, especially young vegetables that have a short shelf life, significant quantities of vegetables rotted in the fields. Second, the closure of most catering and processing companies has led to a sharp drop in demand for vegetables and a serious backlog of products. However, in the long run,

labor shortages and regular production will increase the production costs of the vegetable industry and the withdrawal of some producers, which may pose a potential risk of rising vegetable prices,

- the agricultural products sales model has been updated due to COVID-19. People didn't buy food in public places, which stimulated the development of e-commerce platforms. In the long run, if e-commerce platforms continue to be used, Serbian consumers, especially young people, will continue to purchase food online, and it will gradually become people's consumption habits. But many producers from the village did not have the technical ability or knowledge to sell products online. As a result, many products were not sold. Also, online trade implies higher costs, due to which the income of producers decreased or goods became more expensive,
- a lot of countries have severely restricted the export of agricultural products. Although the WHO has proposed that after the outbreak, there is no reason to take unnecessary measures to interfere in international travel and trade, many countries have nevertheless adopted restrictive measures. Serbia has banned the export of the most important agricultural products,
- a series of restrictive measures in various countries have prolonged the transportation and customs clearance time for exported agricultural products, resulting in an increased risk of default on export contracts. Due to the short shelf life and freshness of agricultural products, these strict regulatory measures have significantly increased the economic losses of those products.

  Supply chain of exported agricultural products was blocked due to delays in the resumption of work and restrictions on the movement of personnel. Nowadays, the supply chain for agricultural exports has now little recovered, but it still faces delays in export delivery progress. As a result, agricultural products trade has declined significantly after the COVID-19 outbreak.

Serbian government adopted measures to ease the impacts of COVID-19. Resuming agricultural production and farmers' work is primary at present. Providing financial support is one of the central policies to help enterprises effectively cope with the impact of COVID-19. The specific measures of financial support are as follows:

- Serbia provided credit support. Specific measures included implementing favorable policies such as offering subsidized loans to agricultural sector, deferring loan repayment deadlines, and instructing companies to make full use of these policies, postponed the payment of tax liabilities, gave a certain amount of money non-refundable.
- Supply financing guarantee. Specific measures include playing the role of government-backed financing guarantee to the agricultural industry.

For agriculture sector and related industries that are affected by COVID-19 and suffer severe losses, the government provided financial help to partially solve the difficulties. These subsidies have reduced the survival pressure and business risks of related enterprises, but amount of subsidies are not enough.

More attention could be paid to compensation to farmers and agricultural enterprises due to their huge income loss resulting from COVID-19. Therefore, the following measures might be considered: increasing subsidies to farmers for agricultural inputs to ensure the procurement of production materials, increasing agricultural financial support funds to the recovery of production, establishing a system for reporting, registering and compensating for agricultural production damage during the epidemic, and timely carrying out the compensation to the farmers to ensure the stability of agricultural production.

Agricultural sector in general has a very important role in the economy of our country and has multiple meanings, enabling a quality life for people, its development affects the safety of people as well as the environment. Even before the outbreak of the virus pandemic, the agriculture sector was burdened with numerous problems as: insufficient number of people working in the fields, especially in the villages, relative age of the agricultural machinery, with the obligation to adapt to EU directives, significant presence of gray economy in sale of agricultural products, excessive fiscal expenditures primarily for excise duties on fuel, the need for digitalization of activities.

Due to the implementation of mandatory measures to maintain distance and people's quarantine, online sales were organized on a small scale, for which many small entrepreneurs did not have the opportunity, and for those who did, the costs were increased, the sales were made through resellers or in the gray zone. All this contributed to the realization of extremely low income, even insufficient to cover fixed costs. Revenues decreased a lot during the ban period, compared to the same period last year.

Many countries, and Serbia, have adopted additional measures to help companies in this sector, which are not enough to address the liquidity of these companies. There is a promise of additional help, which means that companies have the so-called a legitimate expectation that a certain property right can be realized, and a legitimate expectation exists only when the state prescribes the conditions under which that expectation will be realized (Rajnović & Cico & Brljak, 2020).

Possible application of organizational changes in entities

In addition to state aid, businesses need to take appropriate measures to stabilize their financial position and secure their future. Poor business performance of companies in the field of agriculture, indicates the conclusion that it is necessary to restructure the business as soon as possible, which should have started immediately with the outbreak of the pandemic, both organizational, financial and maybe ownership restructuring. These are all processes that last and give results over a long period of time. When we talk about organizational restructuring, it is necessary to apply those measures and organizational forms that give results in a short period of time.

Since wages, fuel costs and public duties make significant value of the total costs of these companies, it was clear that those costs became high, and that certain changes need to be made:

- Applying downsizing, reducing the number of hierarchical levels of management, transferring decision-making to a lower level of management;
- Relocation of tasks outside the organization, with good planning and budgeting, it is necessary to consider whether certain functions, especially those that make ancillary activities should be entrusted to other companies.
- Creating a consortium of several business entities when applying for certain jobs. By performing the work together, the problem of lack of means of could be overcome, i.e. the impossibility of investing in the renewal of the agricultural machinery, etc. whose average age in Serbia is high. In addition, it strives to meet certain standards regarding environmental protection.
- Automation and digitalization in the field of agriculture was a task that was set before the pandemic, but now it is even more important that there is still a need for less contact, but it is also important to reduce operating costs and security quality of work.

For the purposes of the paper, the authors conducted a survey in which 61 respondents participated, i.e. 32 family farms and 29 companies. The data were collected in the period from March to December 2020, by interviews with representatives of economic entities and other mentioned sources. The analysis of the research showed that the largest number of companies immediately implemented some of the measures of organizational restructuring, most often downsizing the corporation, merging with other related companies to share costs and procuring land maintenance materials, which somewhat mitigated the damage caused by the crisis. Farms most often teamed up with other related companies to share costs and procure land maintenance materials.

Conclusion

Going through the phases of the life cycle, companies are periodically exposed to various crisis situations. Sometimes it happens that in a long period of time, even centuries, this situation is not caused by the COVID 19 pandemic. The appearance of the virus marked a change in people's entire lives and caused major disruptions in economic activity around the world, which was already burdened by various conflicts. In the new crisis circumstances, the restructuring of companies becomes a necessity, especially organizational transformation or major discontinuous change that leads to the application of some other models and forms of organization. Such changes include reengineering, downsizing, outsourcing, etc. These are major changes that require changes in a larger number of parameters, large volume and in a short period of time.

Some economic activities have been extremely affected by the pandemic, and they have even been banned from doing business for a while, due to measures to combat the spread

of the virus. Among those activities is the agricultural sector. For these reasons, it is necessary to react quickly and establish new forms and ways of doing work, as a condition for the survival of companies in agribusiness sector. Companies in this sector faced two extremes, they fight for survival in the newly created crisis business conditions, and at the same time they are preparing for future business which must be of better quality, more modern, more sophisticated, which certainly requires significant investments.

Adoption of some measures of restructuring, means the necessity and requirements for changes, in terms of taking into account sustainable development, environment and use of modern, digitized techniques in work, connected and automated multimodal mobility. Being in such circumstances in our country, the economic and professional public has taken a stand and advocates for an orderly business environment, in which, together with the institutions, the causes of the problem will be eliminated and the existing solutions will be improved. The economy has a number of concrete, generally acceptable proposals for solutions that are in the general interest.

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Conflict of interests

The authors declare no conflict of interests.

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FACTORS INFLUENCING DEVELOPMENT OF GREEN WOMEN'S ENTREPRENEURSHIP IN SERBIA

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ABSTRACT

Environmental demanding situations require businesses to innovative as a way to gain each environmental, economic and social goals. This article objectives to suggest the elements influencing improvement of green female entrepreneurship thinking about the improvement possibilities thru standardization and gender equality inherent within side the green economy. Using the methods of regression evaluation with the aggregate of Likert's scale approach, 226 woman entrepreneurs from Serbia in 2021 have been involved in the research. The findings display female entrepreneurship however also, that there may be inadequate interest been committed to them within side the procedure of greening their enterprise in green economy support measures for small and medium companies.

Introduction

The significance of entrepreneurship is specifically applicable in dynamic business enterprise environment, when you consider that smaller scale organizations are flexible,

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progressive and adaptable to speedy modifications within side the market (Schumpeter, 2017; Drucker, 2002). There is an in depth literature on the overall position and significance of entrepreneurship (Duflo, 2012; Grozdanic, 2009; Kvrgic, 2018; Popovic, 2020), however much less studies on distinctive factors of female entrepreneurship, what has motivated the authors of the paper to awareness the gender issue, and greater exactly on green female entrepreneurship (De Bruin, Brush & Welter, 2006). Along with the world of small and medium-sized organizations (Jovanovic & Lazic, 2018), female entrepreneurship is vital for economy, GDP growth, employment improvement, for the country as the entrepreneurial region, realization of gender issues of GDGs.

Serbia has rolled out measures and programs to stimulate SMEs innovative, financial, market performance (Statistical Office of Serbia; Ministry of Economy, 2018). So, the institutional framework has been strengthened, permitting extra attention of SMEs' pastimes in coverage making, the Council for SMEs, Entrepreneurship and Competitiveness have become more operative and supportive. In addition to tracking and coordinating the implementation of the SME Development Strategy 2015-20, it additionally offers tips and initiates custom designed programs for SMEs, beginning a female enterprise has come to be easier, quicker and cheaper.

Support measures for SMEs have won traction, improving basic monetary and nonfinancial aid to SMEs, and growing the scope of female enterprise aid offerings to encompass a much broader variety of custom designed programs (Voinovich, Zelenovic & Cvijanovic, 2017). The motivation for the studies on this paper are the demanding situations for coverage makers and SMEs in adopting environmentally sound practices, accreditation and standardization roles in green economy. Also of interest of authors was SMEs' attention of the possibilities supplied through going green, making sure greater qualitative aid and complementarity most of the diverse support measures in green economy, standardization implementation and different friendly framework initiatives (Wysocki, 2021; 2016; Vojteski, 2012). This paper pursuit to discover a number of the crucial dilemmas related to the institutional SMEs support in green economy and standardization confronted via way of means of female businesses importance. Based on the literature on women s entrepreneurship and SMEs development in Serbia the paper offers an outline of current framework on female entrepreneurs, accompanied via way of means of an outline of the studies design, studies findings and hints for practice.

The women's entrepreneurship in Serbia framework

The environmental issues are seemed to be the important goal in the back of eco-innovation (EC, 2011; Ekins, 2010). Nevertheless, its implementation can also be due to value reduction, more manufacturing performance or advanced product quality, or innovative initiatives. The implementation of eco-innovation additionally has a sizeable effect at the picture of the entity, and its products (Eryigit & Özcüre, 2015; Lapreche & Uzunidis, 2012; EC, 2012), supporting eco-innovations in enterprises (Paraschiv, et al.2012).

In 2020 SMEs ruled the economy's commercial enterprise quarter, accounting for 99.8% organizations of the whole enterprise population. The large majority have been micro organizations (96.2%, 344 281 firms), and small companies (from 10-forty nine employees, 10 583). SMEs hired almost 65% of the whole labour force, at the same time SMEs generated an envisioned 54.1% value added in 2017. 39.3%, SME make contributions to exports (Ministry of Economy of Serbia, 2018).

According to the Gender Analysis for Serbia report, the share of entrepreneurial women has been increasing – from 7.9% in 2007 to 14.9% in 2011 and to 31.7% in 2014. However, only 19.6% of female entrepreneurs run enterprises (Dokmanovic, 2016). The score for

According to the Gender Analysis (Dokmanovic, 2016) the proportion of female entrepreneurs has been increasing – from 7.9% in 2007 to 14.9% in 2011 and to 31.7% in 2014. However, handiest 19.6% of female entrepreneurs run companies. The rating for women's entrepreneurship stands at 4.35 (OECD, 2019).

The Strategy for Supporting the Development of Small and Medium Enterprises, Entrepreneurship and Competitiveness 2015-2020 and its action plan include women's entrepreneurship as an important pillar. Cross-sectoral policy support to women's entrepreneurship can be seen in the plans of National Employment Service, Gender Equality Strategy(2016-2020), Protection strategy against Discrimination and Implementation Action Plan (2014-2018), with the the coordination Body for Gender Equality. Serbia's score of 4.55, according to the (EC, 2018, EPA, 2014) in the area of standards and technical regulations and alignment with the EU acquis is the highest in the Western Balkans. Serbian performance in the area of SME greening is quite low at 2.21, and along with Albania, Serbia is among the three lowest-performing economies in the region.

The Strategy for SMEs and Competitiveness 2015-2020 development and its motion plan encompass women's entrepreneurship as an critical pillar. Cross-sectoral coverage help to women's entrepreneurship may be visible withinside the plans of National Employment Service, Gender Equality Strategy(2016-2020), Protection method towards Discrimination and Implementation Action Plan (2014-2018), with the the coordination Body for Gender Equality. Serbia's rating of 4.55, in line with the (EC, 2018, EPA, 2014) withinside the vicinity of requirements and technical guidelines and alignment with the EU acquis is the very best withinside the region, but Serbian overall performance withinside the vicinity of SME greening is pretty low at 2.21, and in conjunction with Albania, Serbia is a few of the 3 lowest-appearing economies withinside the region.

Environmental guidelines concentrated on SMEs are protected in countrywide strategic documents. The advertising of eco-innovation and support measures efficiency (especially power efficiency) as critical targets beneath Neath the pillar at the Improvement of the sustainability and competitiveness of SMEs are underlined, the measures helping those targets, the enterprise of attention elevating workshops on eco-

innovation and the green economy, the supply of professional help to the enterprises which might be making ready eco-innovation mission proposals for Horizon funding. Information on environmental standards, eco labelling, and inexperienced procurement is supplied through Eco portal.

Some superb traits as regards economic incentives are designed, just like the Green Innovation Vouchers, sports via DRIVE Programme, Green Fund reestablishment, however now no longer nonetheless covering the SMEs. Serbia's records portal TEHNIS gives records on export necessities and compliance mechanisms, in which available, are fragmented.

A well-designed and complete pool of records might consequently advantage SMEs, which frequently do now no longer have time, sources or the employees potential to acquire records from diverse sources, establishments and websites.

To replicate EU sectoral regulation the country wide regulation has been similarly amended, with a giant development made in transposing the European requirements into country wide ones (The Institute for Standardization of Serbia have become a complete member of the European Committee for Standardization (CEN) and (CENELEC).

Serbia is likewise a complete member of the International Organization for Standardization (ISO), the International Electrotechnical Commission, and the European Telecommunications Standards Institute, properly incorporated into the worldwide metrology network.

According to OECD data (2018) Serbia has 628 authorized conformity evaluation bodies (CABs), forty nine of that are designated, with the giant boom of 20% withinside the variety of packages for accreditation. Serbia's overall performance in presenting facts on requirements and elevating attention in their advantages is the very best withinside the Western Balkan region, however nevertheless with out the implementation of any ICT-primarily based totally modern equipment which intention to facilitate SME participation in growing requirements or economic measure.

Hypothetical research model

There are defined further 3 variables for the research:

2 independent variables:

(A) Variable : Standards and technical regulations (abbr.STRI) , and

(B) Variable: green economy support measures (abbr.GESM) , and

1 dependent variable:

(C) Variable: Green female entrepreneurs development (abbr.GFED).

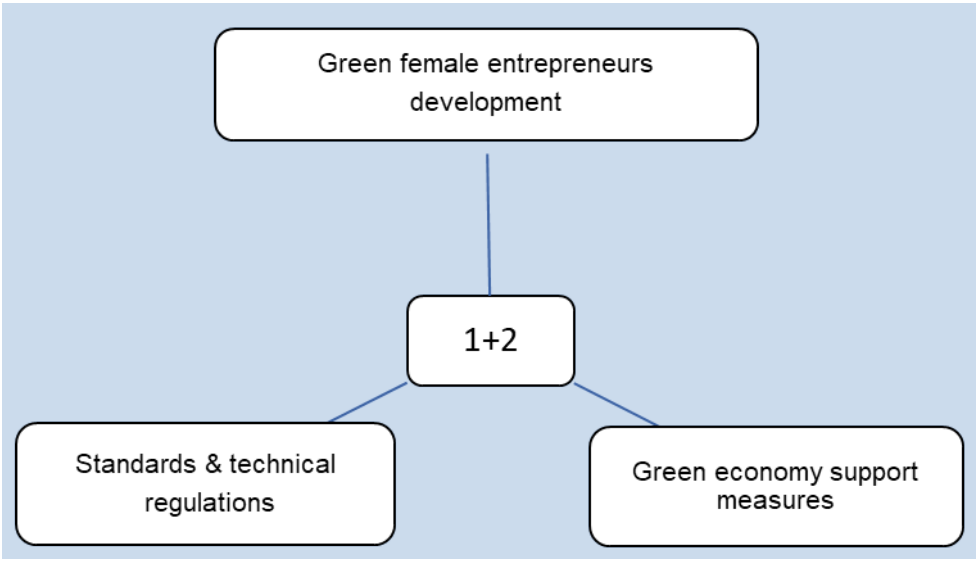
One main (H_0) and two auxiliary (H_1,H_2) hypotheses are defined (Graph 1):

H_0 = The level of green female entrepreneurs' development depends of support measures in green economy and the level of standards and technical regulations implementation.

H_1= The level of standards and technical regulations implementation impacts development level of green female entrepreneurs.

H_2= The level of green economy support measures impacts the development level of green female entrepreneurs.

Figure 1. Hypothetical research model



Methods and materials

Through this studies, the authors will discover the position of support measures, barriers, enablers and vital dilemmas that a success female entrepreneurs are confronted with in maintaining and developing their businesses in green economy, inclined to fill additionally the present hole in studies and literature on progressive interest of women s entrepreneurship (Agarwal, 2018; Awan et al, 2020; Cvijanovic, 2020; Doran & Ryan, 2012; Dutta, 2020; Grozdanic, Radovic, Jevtic. 2013). The foremost goal of the studies is to evaluate the the extent of help to female businesses in Serbia, and to become aware of a number of the vital dilemmas related to the institutional SMEs support for green SMEs.

In order to assess the growth capability of female entrepreneurs in green economy in Serbia, a subject survey become conducted. The questionnaire become designed to acquire statistics and perceptions of female entrepreneurs at the elements applicable for the evaluation of growth capability, scandalization and support emasures for green economy in Serbia withinside the green women's entrepreneurship development (Dimitrijevic et al. 2017; Nhamo & Mukonza, 2020; Grozdanic et al. 2009; 2013).

Methods used are correlation and regression analysis, found out withinside the statistical software program IBM SPSS 26 and IBM SPSS AMOS 26. Qualitative information that specialize in figuring out their evaluation at the guide measures for SMEs in green economy and the standards and technical regulations and their impacts on green women's entrepreneurship development in Serbia has been additionally a part of the questioner. The Likert's scale approach changed into used to qualify their solutions with the weighted score scale from 1-5: 1 – I absolutely disagree, 2 - I disagree, 3 - indecisive, 4 - I agree and 5 - I absolutely believe given claims. The statements approximately the have an effect on of which the studies individuals said include 10 elements inside 3 described classes as enterprise dilemmas at the have an effect on at the growth of women's enterprises.

The research covers the entire territory of Serbia. It includes 226 female entrepreneurs and enterprises owned by women. The on line questioner with questions about industry enterprise sectors, wide variety of employees, the earnings with the origin of the businesses interviewed was provided in 2021.

Attitudes are described for values. 54, 38% of the sample are female entrepreneurs from the food processing industry and trade, 29, 82% from tourism, hospitality and the touristic events organization and 15, 78 % from ICT and marketing services. Most of women enterprises come from small and micro enterprises, as: 69, 73% had from € 2000 to €50,000 annual, and 74, 99% have been with 1-20 employees. Only 13% found out their sales via export activities (Table 1).

Table 1. Descriptive statistics

	Count	Prob
Total No. of participants	228	1.00000
Industry sector		
Food processing and trade	124	0.5438
Tourism, hospitality and touristic events organization	68	0.2982
ICT and marketing services	36	0.1578
Revenue in 2020.		
From € 2000 to €10.000	34	0.1491
From € 10.001 to € 50.000	125	0.5482
From € 50.001 to €100.000	46	0.2017
Over € 100.000	23	0.1008
No. of employees in the enterprise		
From 1 to 10 employees	80	0.3508
From 11 to 20 employeeS	91	0.3991
From 21 to 30 employeeS	34	0.1491
From 31 to 50 employees	18	0.0789
Over 50 employees	5	0.0219
Revenue origin		
Domestic market	198	0.8684
Export	30	0.1315

By correlation and regression analysis, the following mean scores of attitudes to the stated claims were obtained (Tables 2-4):

Table 2. Factors and values for the Standards and technical regulations

No.	Set claims	Mean scores
A_1	The SMEs & entrepreneurs access to standardization (participation in developing standards) affects GFED	3.6885965
A_2	The level of the harmonization with EU acquis in Technical regulations, Standardization, Accreditation & Metrology affects GFED	3.9736842
A_3	The financial support to SMEs & Market surveillance affects GFED	3.8991228
A_4	The awareness raising and information affects GFED	3.8684211

Table 3. Factors and values for the green economy support

No.	Set claims	Mean scores
B_1	The framework for environmental policies targeting SMEs& entrepreneurs affects GFED	3.9385965
B_2	The incentives for SMEs & entrepreneurs greening affect GFED	3.8508772
B_3	The instruments for SMEs & entrepreneurs greening affect GFED	3.7894737

Table 4. Factors and values for the green female entrepreneurs)development(GFED

No.	Set claims	Mean scores
C_1	The level of planning and design of GFED affects its development	4.0087719
C_2	The level of the implementation of principles of GFED affects its development	3.8245614
C_3	The monitoring and evaluation of GFED enables its development	3.9035088

Variable (AC) correlation and regression analysis

Theoretical system model (AC) is shown in (Figure 2). The model make two variables (A) independent) and (C) dependent variable.

Figure 2. Theoretical system model AC

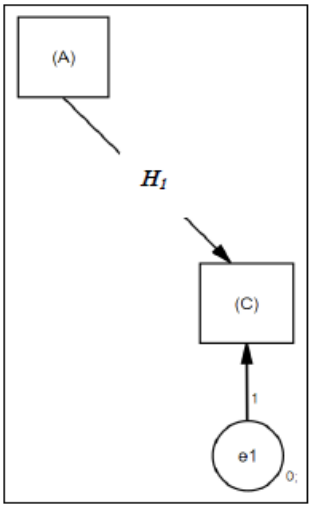


Figure 2 (on the left) performs the system model evaluation. 0.631565 is the value of the coefficient of determination showing the opportunity that the dependent variable (C) can be explained with 63.15% by independent variable (A). Based on this, it can be concluded that the correlation coefficient between (A) as the independent variable and (C), the dependent variable is 0.79471, and it is strong correlation between them.

Figure 3. Standard (left) and non-standard (right) contribution sizes of the AC system model

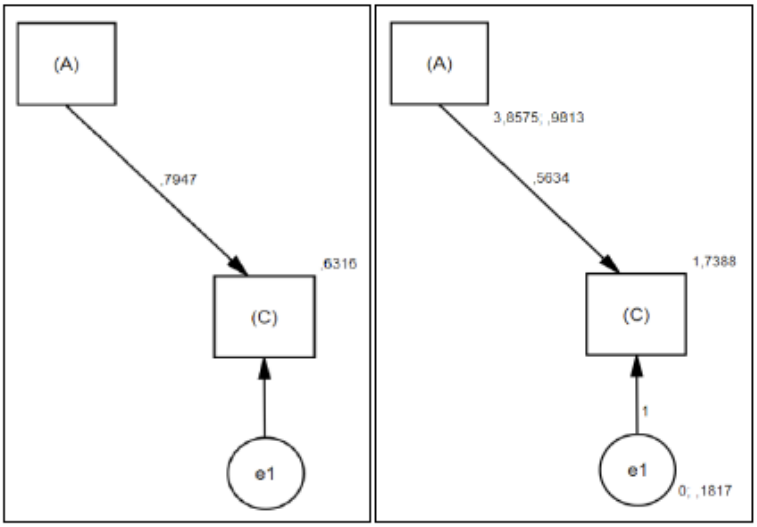


Table 5 presents statistical significance assessment. It is [F (1, 226) = 387.4052, p <0.0001].

Table 5. ANOVA

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	1	71.03074	71.0307	387.4052
Error	226	41.43709	0.1833	**Prob > F**
C. Total	227	112.46784		<0.0001

Based on these data, the first hypothesis ***H_1* = *The level of standards and technical regulations implementation impacts development level of green female entrepreneurs in Serbia*** can be confirmed.

Figure 3 (on the right) performs the system model evaluation non-standard contribution values. The mean score for the independent variable (A) is 3.8575. For the independent variable (A) 0.9813 is the value of the magnitude of the variance. 0.1817 is the variance for the dependent variable (C). Based on the presented data, a multiple regression equation can be formed (formulas 1 and 2), which reads:

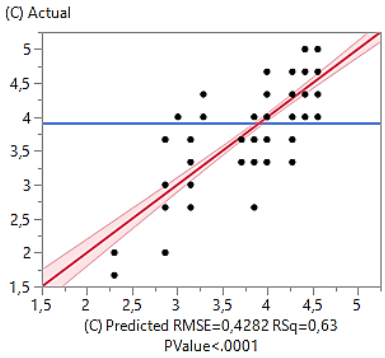
$$y = 1.7388285 + 0.5634419 \cdot x_1 \quad (1)$$

or

$$\text{The level of green female entrepreneurs development} = 1.7388285 + 0.5634419 \cdot \text{The level of standards and technical regulations implementation} \quad (2)$$

A diagram of the multiple regression equation for variables (AC) is given in Figure 4.

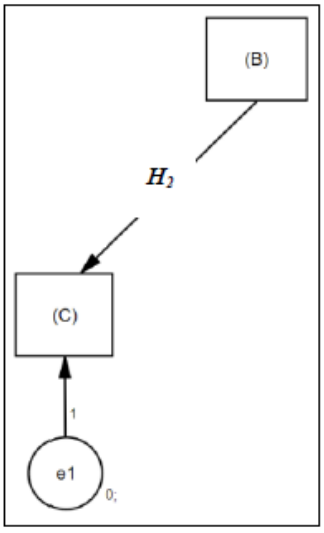
Figure 4. A diagram of the multiple regression equation for variables (AC*)*



Variable (BC) correlation and regression analysis

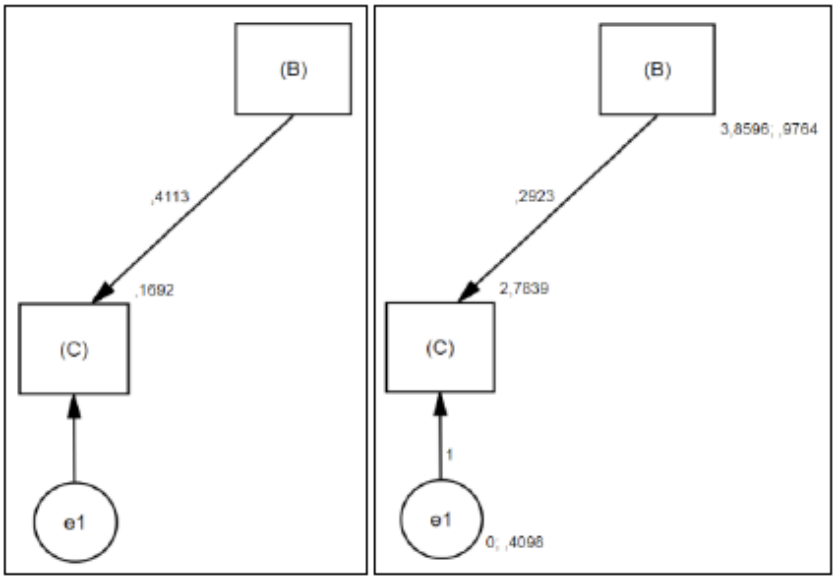
Theoretical system model (BC) is shown in Figure 5. The system model consists of an independent variable (B) and a dependent variable (C).

Figure 5. Theoretical system model BC



The basic evaluation of the system model is performed at Figure 5 (left). 0.169172 is is the value of the coefficient of determination, which suggests that with 16.91% the dependent (C) variable can be explained by (B).variable As the coefficient of correlation between these 2 variables (B) and (C) is 0.41130, the correlation between them.is weak.

Figure 5. Standard (left) and non-standard (right) contribution sizes of the BC system model



The statistical significance assessment is [F (1, 226) = 46.0177, p <0.0001], and is presented in Table 6.

Table 6. ANOVA

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	1	19.02638	19.0264	46.0177
Error	226	93.44146	0.4135	**Prob > F**
C. Total	227	112.46784		<0.0001

Based on these data, the second specific hypothesis can be confirmed, ***H_2= the level of green economy support measures impacts the development level of green female entrepreneurs.***

Figure 5 (right) presents the set system model non-standard contribution values. is the The independent variable (B). mean score is 3.8596. The magnitude of the variance for the independent variable (B) is 0.9764, and the variance for the dependent variable (C) is 0.4098. Based on the presented data, a multiple regression equation (formulas 3 and 4) can be formed, which reads:

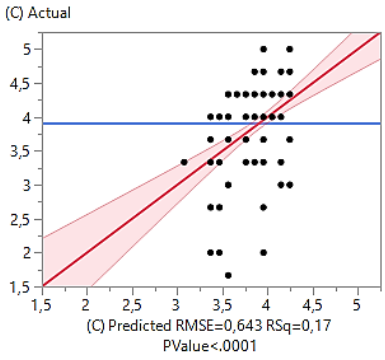
$$y = 2.7839305 + 0.2923453 \cdot x_2 \quad (3)$$

Or

$$\text{The level of green female entrepreneurs development} = 2.7839305 + 0.2923453 \cdot \text{The level of green economy support measures} \quad (4)$$

A diagram of the multiple regression equation for the variables (BC) is given in Figure 6.

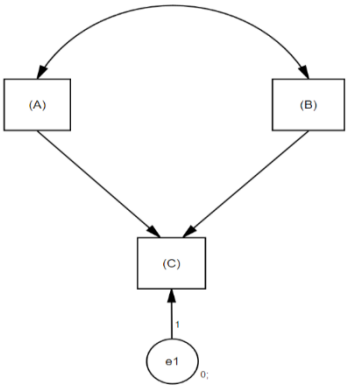
Figure 6. A diagram of the multiple regression equation for the variables (BC)



Variable (ABC) multiple correlation and regression analysis

Presented theoretical system model (ABC) consists of independent variables (A) and (B) and the dependent variable (C). (Figure 7).

Figure 7. Theoretical system model for (ABC)



The basic standard analysis of the system model is performed in Figure 8. The worth of the coefficient of determination is 0.822772 which implies that with 82.27% variability of the variable (C). may be explained by different variables. The result support sturdy

correlation of variables. -0.7947 value of correlation coefficients shows that the biggest correlation is found between the dependent variable (C).and independent (A) variable. The littlest size of the correlation is found between the independent variables (A) and (B) and it's negative and insignificant and amounts to -0.0324. The biggest influence on the variable (C) has the independent variable (A) and is 0.80888, and also the smaller influence has the independent variable (B) is 0.437502.

Figure 8. Standard contribution sizes of the system model for (ABC)

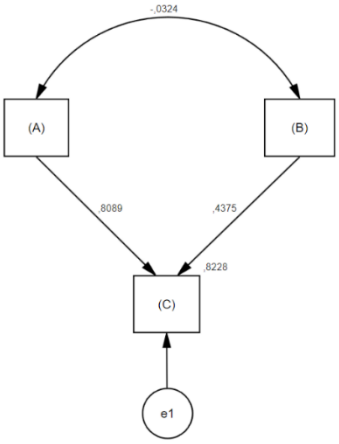


Table 7 presents the statistical significance assessment, that is [F (2, 225) = 522.2756, p <0.0001].

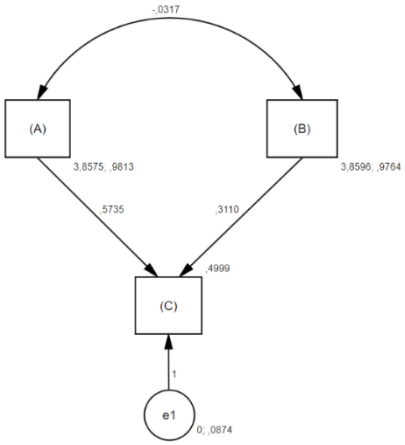
Table 7. ANOVA for variable (C)

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	92.53539	46.2677	522.2756
Error	225	19.93245	0.0886	**Prob > F**
C. Total	227	112.46784		<0.0001

Based on these data, the set main hypothesis can be confirmed ***H_0: The level of green female entrepreneurs development depends of support measures in green economy and the level of standards and technical regulations implementation.***

Non-standard contribution values for the set system model are given in Figure 9. The the independent variable (A) has 3.8575 for the highest mean value , and the lowest for the independent variable (B) is 3.8596. The largest size for the variance is the size of the independent variable (A) 0.9813, and the smallest variance is for the dependent variable (C) and is 0.0674. The covariance between the independent variables (A) and (B) and is -0.0317.

Figure 9. Non-standard contribution sizes of the system model for (ABC)



Based on the data from Figure 9, a multiple regression equation can be formed (formulas 5 and 6), which reads:

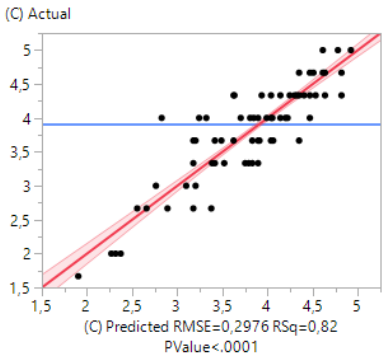
$$y = 0.4998598 + 0.5734877 \cdot x_1 + 0.3109654 \cdot x_2 \qquad (5)$$

or

$$\begin{aligned} &\textit{The level of green female entrepreneurs development} = \\ &= 0.4998598 + 0.5734877 \\ &\cdot \textit{the level of standards and technical regulations implementation} + \\ &+0.3109654 \cdot \textit{the level of green economy support measures} \end{aligned} \qquad (6)$$

Diagram of the multiple regression equation for variables (ABC) is given in (Figure 10)

Figure 10. Multiple regression equation diagram for variables (ABC)



Discussion

According to key findings on the chosen criteria influencing the level of development of green female entrepreneurs, they referred to environmental issues, green products and services and standards, SMEs and entrepreneurs support measures in green economy are relevant for further green female entrepreneurs development in Serbia. According to the defined variables in the theoretical research model, and multiple regression equation analysis of the key results of the research, the hypotheses are confirmed. So, the influence of standards and technical requirements, metrology, harmonization with the EU and implementation in the area of green economy is found as very high.

The lower grades are given to the group of criteria concerning SMEs and entrepreneurs support measures in green economy, mostly because instruments and incentives are still not developed enough, as well as the coordinative activities among other participating institutions as, finance, education, innovation, economy associations are.

Conclusions

Based on a literature and findings of the analysis on factors influencing the extent of development of green female entrepreneurs, it are often complete that comprehensive measures are required so as to extend green female entrepreneurs, also as more common and coordinating actions of policy makers, finance, and academia. The results imply to the little share of female victimization programs and support services for SMEs and entrepreneurs in green economy. Their capacities to perform green innovation activities are restricted by their money and human resources. so saying on planning higher promotion of innovative programs of the female entrepreneurs, guaranteeing consolidation of presidency policy actions for green women's entrepreneurs.

There are sensible leads to the standardization and accreditation policy area, seen from the best performing artist within the Western Balkan region for Serbia, however some challenges remain.

To feminine entrepreneurs establishing of green product and repair contact points may be of use. The additional operationalized treatment of the character of SMEs and entrepreneurs greening in the country, because the creation of the body or a unit answerable of coordinative the implementation of SMEs greening measures may be. Enhancing the support to SME greening and green female enterprises is incredibly important, as the inexperienced Innovation Voucher in SMEs' transition to a green economy support is.

Conflict of interests

The authors declare no conflict of interest.

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APPLICATION OF THE AGRICULTURAL AND FOOD PRODUCTS TRADEMARK SERVING TO INCREASE THE AGRICULTURAL SECTOR COMPETITIVENESS

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ABSTRACT

The subject of this paper is a research of state, processes, and conditions for the use of agricultural and food product trademark, both in Serbia and worldwide. During the period between 2015 and 2019, the agricultural food products were among the most represented classes of goods in terms of trademark applications, according to the Nice Classification of goods and services, both in our country and worldwide. The aim of this paper is to promote the competitiveness of the agricultural sector, with an emphasis on non-price competition forms such as the trademark application and protection, with a particular focus on international application and protection via the Madrid Agreement These forms of non-price competition could become the main promoters of the Serbian economy and the expression of the country's identity, given that the image of product quality indirectly projects to the country's reputation as well.

Introduction

Nowadays, the economies must compete based on measurable indicators, such as national and foreign investments, export, tourism, etc. Globalisation has changed the game rules. An economy cannot flourish without investments, which partially depend on self - promotion, therefore all the countries should create their own positive identity. In such a situation, a program aiming to promote the development and protection of national trademarks could serve as an instrument of change.

Trademarks and the legal terms related thereto are the perfect instruments of economic development, providing a strong impact on equal participation in international trade.

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Such an instrument could be equally used in developing and developed countries, multinational corporations, and in small and medium enterprises.

Trademarks, as an integral part of intellectual property, serve as a means of transferring the goods and services, which is manifested through an increase in the trade volume of all the goods and services, both on national and international markets.

The existence of trademarks in a certain area provides the reputation and recognisability that shall enable a company from a developing country to attract investors or license buyers. This fact gains ground considering that the protected trademarks in developing countries represent more than 10% of total industrial sector companies' value, around 40 % in the financial sector and sector of other services, and between 70% and 90% of production in the agricultural, food and luxury products sector (Olins, 2003). The policy of trademark protection and application perceived in this way, and supported by an export-oriented production, might secure a faster economic development. This indicates how important trademarks are today in the area of international trade, finances, and culture.

From the moment when the famous trademarks had become an important part of marketing strategy in the business world, the importance of trademark legal protection started to grow. A trademark that is clearly recognisable by the consumers, may be the most important single asset of the intellectual property, or even more valuable than all the types of assets owned by a company. For example, the "Coca Cola ®", Nestle ®, and "Marlboro ®" trademarks have proven to be the outstanding economic goods in terms of returns on the initial and current investments in their creation and protection (Merges at al., 2009)

Trademark protects a sign which serves to distinguish the goods, i.e. services on the market, and which can be graphically represented. This sign can contain the following: words, letters, slogans, numbers, images, drawings, colour arrangements, three-dimensional shapes, combinations of such signs, as well as musical phrases. A trademark is basically a name of a certain manufacturer's product in a certain product group. A trademark includes tangible qualities, such as appearance, performances, packaging, guarantees, and other accompanying documents. More importantly, a trademark includes the attributes projected by the consumer itself, beyond these tangible properties (Gilbert, 1999). These aspects may include the attitudes towards a company that manufactures the product or towards a trademark itself, beliefs regarding the relationship between one's own personality and a trademark, the relationship between the others and a trademark, etc.

Consequently, a trademark does not only constitute an exclusive, total, monopoly right, it also represents a certain value. A sign protected with a trademark represents the company's assets and it may be a subject of trade. A trademark that enjoys certain respect may attract and secure the clients, thus bringing excess profits. A trademark extends the patent's economic life. Regarding the aforementioned, a trademark's economic value is sometimes extremely high. In certain cases, it amounts to 50% of the company's total value or even 90% of its value (Manigodić, 2001). One of the economic definitions of

trademark defines it as a distinguishing sign used by its holder to attract clients and which has become an increasingly frequent contemporary investment.

According to Kami Idris (Idris,2003),the aim of protection provided to commercial signs is to develop a market through diversification, that is, a possibility to distinguish the goods and services labelled with a trademark, based on their origin, quality, and reputation, i.e. the consumers' loyalty.

Trademarks, as part of the industrial property, had been recognised as a financial asset during the 1990s. At the beginning of the 21st century, the most important task facing the companies shall be to understand the potential of their own trademarks (Bobrovszky, 2002). In the future, companies shall compete more and more on the contemporary markets based on their intangible values, and the real competition shall be the one among their reputations.

The goods, i.e. services must be marked and classified according to the classes from the Nice Agreement on the international classification of goods and services for the purpose of trademark registration. If the application fulfils the requirements for recognition of rights, the Intellectual Property Office passes a decision on trademark recognition and enters the recognised right, with necessary data, to the Trademark Register. A trademark certificate is issued to a trademark holder and a recognised right is being published in the Intellectual Property Gazette, issued by the Office bimonthly (Simin Jovićević, 2011).

In order to overcome a complicated and expensive procedure of protecting a company's sign in the international environment, as early as 1891, the Madrid Agreement Concerning the International Trademark Registration had been concluded. The Madrid Agreement made it possible for all the applicants coming from the member states of the Madrid Union to achieve the protection on territories of all or some member states, by submitting a single application to its national office. The Kingdom of Serbs, Croats, and Slovenes had been a „member of the Agreement from February 26, 1921, (Official Gazette of the SFRY" – International Agreements, no.2/74), (Besarović & Žarković, 1999).

International registration is valid for 20 years, and its renewal is possible for an unlimited number of times (Simin Jovićević, 2012). The internationally registered trademark, during the first five years, depends on the validity of national registration in the country of origin.

Materials and methods

A scientific rationale of this paper lies in the fact that a topic of trademark application and protection in the area of agriculture and the food industry, serving to increase national economic competitiveness, has been insufficiently or too little explored in our economic theory. This research provides an utterly objective overview, given that the entire analytics is based on the specific data obtained from the public registers of the Intellectual Property Office of the Republic of Serbia and the World Intellectual Property Organisation (WIPO).

The subject of this paper is a research of state, processes, and conditions for the use of agricultural and food product trademark, both in Serbia and worldwide, considering that agriculture is positioned at the top, that is, among the three leading industrial activities in class representation, in terms of trademark applications, in the world. The existence of products with a recognisable trademark is a prerequisite for an equal and successful international competition and global positioning of our agricultural and food products. The aim of this paper is to promote the competitiveness of the agricultural sector, with an emphasis on non-price competition forms such as the trademark application and protection, with a particular focus on international protection via the Madrid Agreement.

Regarding the general scientific methods used in this paper, we have applied the statistical methods for quantitative data processing. Using a statistical analysis, we have explained the structure, dynamics, interdependence, and the influence of trademark application and protection on competitiveness development through an increased export volume of agricultural products, both in our country and abroad. Speaking of the specific scientific methods, we have used the analysis and synthesis method, for comparing the development of national competitiveness regarding the trademark protection and by the geographical coordinates (Serbia and the member countries of Madrid Agreement on International Trademark Protection) in the period between 2015 and 2019. The most prominent types of analysis in this paper are as follows: Structural, functional, genetic, and comparative analysis.

Trademark application and protection in Serbia is an area of law that has been largely harmonised with the European Union's regulations and Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Thanks to the fact that laws from this area have been of a relatively recent date, today we can talk about the continuation of the harmonisation process. The problem of the economy lies in the low level of application and protection of national, and especially international trademarks, and, by extension, the lack of business entities' willingness to apply the laws governing this area.

Research background

Agriculture as a factor of economic development and wealth creation

Agriculture is one of the world's largest industries globally, about 1 billion people work in the agricultural sector, which represents about 28% of the whole population employed in 2018. Share of the agricultural population in total and in certain countries, globally speaking, is as follows: China 25%, India 41%, Russia 5,6%, USA 1,4%, Turkey 18%, Greece 11,6%, Italy 4%, Great Britain 1%, France 2%, Austria 3%, Bulgaria 6%, Poland 9%, B&H 15%, Montenegro 8%, Croatia 6% and in Serbia 15% (data.worldbank.org/indicator/sl.agr.empl.zs,2020). This is an important indicator of economic structure, leading us to a conclusion that the development of the agro-industrial sector is one of the main development directions**.** None of the countries in the world had found their way out of crises until resolving the problems in the agricultural sector (Simin Jovićević at al., 2016).

In the period between 2015 and 2019, trademarks of agricultural and food products were positioned at the top, that is, among the three leading industrial activities in representation by classes for the trademark applications worldwide, and in 2016 and 2017 the share rose to 18%. This fact encourages us in our endeavours to assume a leadership position in the production, processing, and marketing of agricultural and food products both on a domestic and international market.

Serbia possesses significant production, natural, and man-made resources as well as an export potential in agricultural production and processing, in the conditions of the national market's constrained capacity. A share of agriculture in Serbian GDP in the last couple of years has been within an interval of 9% and 11%. However, if we analyse the total contribution of agriculture in the other economic sectors, such as the food industry, producers and processors of inputs and raw material, this share exceeds 30% of total GDP (Stanković, 2020).

The basic question is to what extent the national agriculture is capable to compete on the international market in terms of its organisation, concept, and orientation. The most important efficiency indicator of agro-industrial production and its influence on the change of competitiveness is – a country's current account balance. Our country has an export potential in agricultural production and processing, which is not valorised. The causes of such a situation lie in the absence of export development strategy and the appropriate incentive measures of economic policy (Simin Jovićević, 2020). The export-import balance of agricultural and food products is the best example thereof.

The most important agricultural products in the export for 2019 are as follows: mercantile corn in the amount of 502 million USD, frozen raspberry in the amount of 234 million USD, tobacco cigarettes in the amount of 196 million USD, fresh apples in the amount of 119 million USD, the other food products in the amount of 104 million, tobacco for smoking in the amount of 101 million USD, the animal feed in the amount of 88 million USD and the raw sunflower oil in the amount of 86 million USD.

Serbia's foreign trade balance regarding its agricultural and food industry in 2019 shows the export value of 3,6224 million USD, which constitutes an increase of 9.1%, compared to the results achieved in 2018 (the amount was 3,319.5 million USD), with the participation in total commodity export of 18.5% (Stanković, 2020).

Table 1. Regional foreign trade structure of the agricultural and food sector of the Republic of Serbia, in the period between 2015 and 2019 (in million USD)

	EU			**CEFTA**			**Russian federation**		
	Export	Import	Balance	Export	Import	Balance	Export	Import	Balance
2015	1367	948	419	920	173	747	270	46	224
2016	1541	941	600	1252	140	1112	321	48	273
2017	1622	864	758	890	146	744	318	37	281
2018	1716	1297	419	941	162	779	370	41	329
2019	1847	1339	508	1014	167	847	398	42	356

Source: Stankovic, V, Statistical Office of the Republic of Serbia, Foreign trade statistics, ST 12, Announcement no. 25, year LXX, January 30, 2020.

According to data from Table 1. which refer to the period between 2015 and 2019, the export average in the EU was 49.2%, and in the CEFTA Agreement countries 33.2%, while in the Russian Federation was 9.7%. The export average for the rest of the countries was 7.9%. In the export of agricultural products in the EU, the primary products i.e. raw materials have been predominant (90%). In the CEFTA Agreement countries, the export structure differs from the EU export, because it is about the products of higher finalisation level. The main export products are grain and grain products. What is noticeable in the structure of foreign trade with the Russian Federation is an ever-increasing share of higher processing stage food products (Stanković, 2020).

The predominant export items are fruits, vegetables, and derivatives, grain, and sugar, while on the import side, besides the group of the so-called inelastic products (coffee, spices, citrus fruit, and protein animal feed) the significant amounts of meat, milk, fruits and vegetables, cattle feed and other derivatives are being represented.

Given the aforementioned, the Government policy should focus much more on the export, conditions of its realisation, method of planning thereof, in order to create an export strategy. The current practice of relying on the potential market surplus of goods for export must be stopped, and the export itself should be planned according to the demand on the global market. A potential in natural resources and comparative advantages of domestic agriculture, as well as the circumstances in the international environment, oblige us and even compel us to choose such an approach.

Results and Discussions

Analysis of the submitted trademark applications in the period between 2015 and 2019 in Serbia

In order to evaluate the condition of technological achievement and degree of economic growth in a country, and its position compared to other countries, a number of domestic trademark applications and registrations is relevant.

In 2019, in the Republic of Serbia, 6799 trademark applications were submitted in total: 2093 domestic and 4706 international applications. Domestic applicants have submitted 1310, while the foreign ones 783 national trademark applications. The rise in the protection of both foreign and domestic trademarks indicates the rising rate of business activities by the companies in Serbia. Trade-in goods and services, supported by the protected trademarks, is the best way for our country to participate in international trade.

Table 2. Structure of the applied trademarks between 2015 and 2019

Structure of Applications Filed from 2015 to 2019				
Year	International Applications	National Applications		Total
		Foreign Applicants	Domestic Applicants	
2015	4617	812	1341	6770
2016	3780	782	1437	5999
2017	4785	773	1309	6867
2018	4835	782	1408	7025
2019	4706	783	1310	6799

Source: Gazette of Intellectual Property, Annual Report, 2020, Belgrade, p.32

The number of foreign applications submitted in a country is a measure of its attractiveness for the technology transfer and sales of new products on its market.

During 2019, 7701 trademarks were registered, out of which 5692 were based on the applications submitted via the Madrid system and 2009 based on the national trademark applications.

These indicators suggest that foreign applicants use more frequently the advantages of the Madrid system. Table 2 shows the growth trend of both domestic and international trademark applications in the last five years, which shows the rising importance of application and use of a trademark as a strategic instrument for conquering or maintaining a market segment, which has a direct impact on the business success of companies and affirmation of national economy.

Classes of goods and services related to the agricultural sector, pursuant to the Nice Classification of goods and services, belong to the classes marked with numbers 29, 30, 31, 32 and 33, 43 and encompass the following:

Class 29. Meat, fish, poultry, and game; meat derivatives; preserved, dried, and boiled fruit and vegetables; eggs, milk, and dairy products; edible oils and fats; dietary products based on proteins and carbohydrates as a diet, etc.

Class 30. Sugar, rice, coffee, tea, flour, cereals and grain products, bread, cakes, sweets, ice creams, molasses, yeast, vinegar, sauces, etc.

Class 31. The agricultural, garden forest products; fresh fruits and vegetables; seed, unprocessed grain, potato; cattle feed, etc.

Class 32. Beer, mineral water, and other non-alcoholic beverages; fruit beverages and fruit juices; syrups and other preparations for beverage production.

Class 33. Alcoholic beverages (besides beer), special vines, spirits, and liqueurs.

Class 43. Services of fruit and beverage safety, temporary storage.

Table 3. Representation of classes related to the agricultural sector, pursuant to the Nice Classification of goods and services in the applications submitted between 2015 and 2019 in Serbia

	Klas 29	%	Klas 30	%	Klas 31	%	Klas 32	%	Klas 33	%	Klas 43	%	Total Klass	%
2015	214	10,5	383	18,8	99	4,7	191	8,5	111	5,5	151	5,3	1.149	**53,3**
2016	223	10	414	18,6	94	4,2	175	7,8	114	5,1	122	5,4	1.142	**51,1**
2017	197	9,4	282	13,5	67	3,2	163	7,8	112	5,3	115	5,5	936	**44,7**
2018	281	12,8	365	16,6	103	4,7	176	8,0	130	5,9	137	6,2	1.192	**54,2**
2019	414	19,7	282	13,4	70	3,3	178	8,5	108	5,1	117	5,6	1.169	**55,6**

Source: Author's calculation based on data from public registers of the Intellectual Property Office of the Republic of Serbia

Table 3 includes both domestic and foreign trademark applicants who submitted applications directly to the Intellectual Property Office in the period between 2015 and 2019, as already illustrated in Table 2. Table 4 encompasses only domestic trademarks in the mentioned 5-year period.

Table 4. Representation of national applied trademarks from the agricultural and food sector between 2015 and 2019 in Serbia

	National applications submitted to the Intellectual Property Office of Serbia	% share of domestic agricultural and food trademarks	Applied trademarks of agriculture and food product
2015	2.153	53,3%	1.149
2016	2.219	51,1%	1.142
2017	2.082	44,7%	936
2018	2.240	54,4%	1.192
2019	2.093	56,1%	1.169
Total	**10.787**	**51.9%**	**5.598**

Source: Author's calculation

By analysing the applied trademarks in Serbia, according to classes of goods and services, especially in the area of agricultural and food products (classes 29, 30, 31, 32, 33, and 43), a conclusion can be drawn that participation in these trademarks prevails in the total number of applied trademarks. Out of a total number of national trademarks applications submitted to the Serbian Intellectual Property Office in all 45 classes, which amounts to 10.787 trademarks, in the period between 2015 and 2019, only six classes mentioned in the previous table belong to the agricultural and food sector, which is on average (51,9%), i.e. 5.598 applied trademarks.

Analysis of international trademark applications according to the Madrid Agreement with emphasis on protection in the sector of agriculture and food between 2015 and 2019

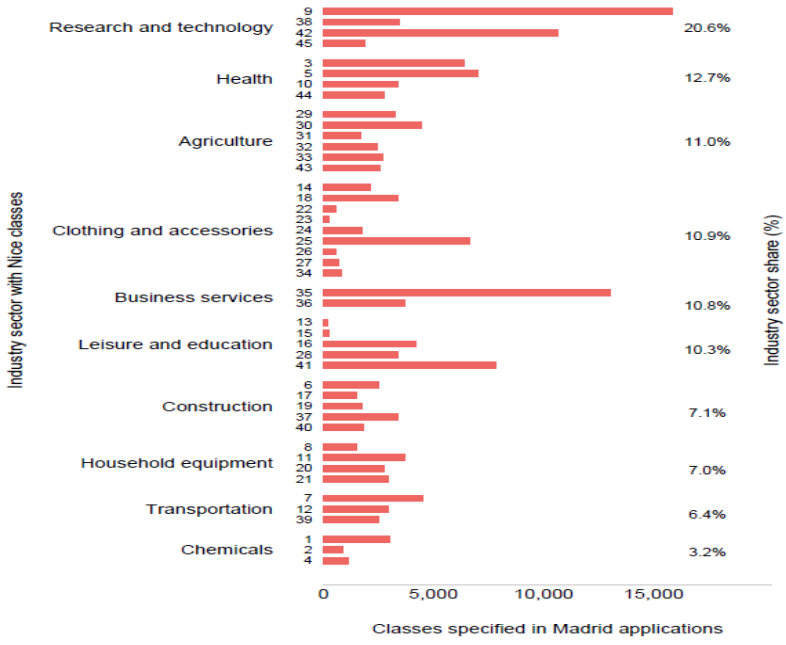
According to the ranking of the ten most competitive areas by a number of applied and registered trademarks in the world, a trend can be followed concerning the supply of goods and services on the market. If we take into account that during the market

research stage, most of the companies that understand the importance of trademarks and service marks first protect the name of their product and service, and only then enter the market, it is clear that a number of applied trademarks in certain classes can be an indicator of demand for goods and services on the market.

The Nice Classification is an international classification of goods and services for the purposes of trademark application and registration. It was established in 1957 by the Nice Agreement, administered by the World Intellectual Property Organization (WIPO), and is currently used by some 150 national and regional IP offices around the world. The Classification consists of a list of classes, together with explanatory notes and an alphabetical list of goods and services. There are 34 classes of goods and 11 classes of services in total. When filing a Madrid application, applicants must indicate all the goods and services for which registration is sought and the classes into which they fall, as it is not possible to add other goods and services and classes at a later date (World Intellectual Property Indicators, 2020).

For the purpose of statistical reporting, the 45 Nice classes can be grouped into 10 industry sectors. The scientific research, information, and communication technology sector which includes top Nice classes 9 and 42, among others, continue to account for the highest share (20.6%) of all classes specified in the Madrid application field in 2019. It is followed by health and agricultural products and services, accounting for 11%, etc., as the Figure 1 below shows.

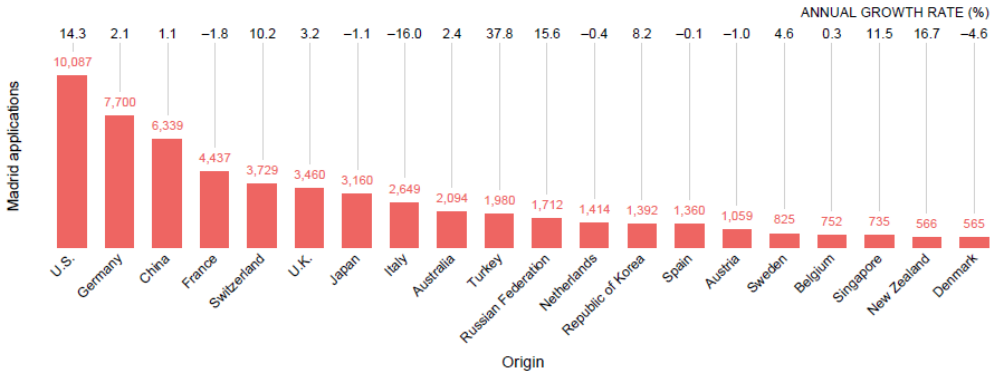
Figure 1. International applications of trademarks by industry sector via the Madrid System in 2019.



Source: Madrid Yearly Review, 2020, p.53

The analysis of 10 leading classes by a number of applications and registrations in the period between 2015 and 2019, as well as their percentage compared to all 45 classes of goods and services pursuant to the international Nice Classification, according to which the international trademark applications are being classified, shows that the three most competitive sectors nowadays are research and development (information and communication technologies), followed by the health sector and finally the agricultural sector, i.e. agricultural and food products and services.

Figure 2.: International applications for the top 20 origins, 2019



Source: Madrid Yearly Review, 2020, p.41

With annual growth of 14.3%, applicants based in the U.S. consolidated their top ranking in 2019 by filing almost 2,400 more Madrid applications than the next top-ranked origin, Germany.

Table 5. Trademark applications by industry sector between 2015 and 2019

Year	2015	2016	2017	2018	2019	Total
International application of trademarks via Madrid System	**48.910**	**52.559**	**56.200**	**61.200**	**66.400**	**285.269**
International trademarks application via Madrid System in %	**11,8%**	**17,9%**	**18%**	**11,3%**	**11%**	**14%**
International trademarks application in the Agriculture sector via Madrid System	**5.820**	**9.408**	**10.116**	**6.916**	**7.304**	**39.564**

Source: Author's calculation

The analysis of applied trademarks in the area of agriculture and food industry in the world, according to the classes of goods and services (according to the Nice Classification of goods and services, those classes are (29, 30, 31, 32, 33 and 43), leads to a conclusion that the share of these trademarks is significant in a total number of applied and valid trademarks (Table 5). Out of a total number of applied trademarks,

based on the Madrid Agreement in all the 45 classes, which amounts to 285,269 trademarks in the period between 2015 and 2019, the six mentioned classes only from the area of agriculture and food industry include 39,564 applied trademarks.

Therefore, out of a total number of international applied trademarks worldwide, in the period between 2015 and 2019, for all the 45 classes of goods and services, the largest share of trademarks related to the agriculture and food area was in 2016 (17.9%) and 2017 (18%), while the average share of these trademarks over the mentioned 5-year period amounts to (14 %).

In 2019, the World Intellectual Property Organization (WIPO) recorded 64,118 Madrid registrations, twice the amount issued by the early 2000s. The long-term trends for Madrid registrations broadly follow that for Madrid applications. Of the 1.5 million international registration recorded since the creation of the Madrid System, about half (741,619) remained active – that is, in force – in 2019 (Madrid Yearly Review, 2020)-

A conclusion could be drawn that the trademarks in the area of agriculture and food industry are of primary importance, considering that compared to all the other industrial and other activities they participate with one-seventh (14%) of all the international applied and registered trademarks in the period between 2015 and 2019.

Conclusions

In order to evaluate the condition of technological creation and economic growth in a country and its position compared to the other countries, a relevant input is a number of domestic trademark applications and registrations. Serbia is an agrarian country, and the importance of trademarks in the area of agricultural and food industry is of high priority, given that these trademarks, in the period between 2015 and 2019, were one of the most represented classes of goods and services in terms of trademark applications, both here and abroad. If we take into account that in 2015, 2016, and 2017, the agricultural and food products were positioned at the top, that is, were the most represented among the classes of goods regarding the trademark applications, here and abroad, it encourages us in our endeavour that companies in Serbia should assume a leadership position in marketing these products both on the national and international market.

Based on the conducted analysis of applied and protected trademarks in Serbia, according to classes of goods and services, especially in the area of agriculture and food products (classes 29, 30, 31, 32, 33, and 43), we may conclude that the share of these trademarks prevails in a total number of applied trademarks. Out of a total number of applied domestic trademarks in Serbia, considering all 45 classes, in the period between 2015 and 2019, as many as six classes belong to the agricultural and food industry sector, which on average amounts to (51,9%).

In the period between 2015 and 2019, trademarks of the agricultural and food products were among the three leading industrial activities by class representation in terms of trademark applications, and in 2016 and 2017 share of these trademarks rose to 18%.

This fact encourages us in our endeavour to assume a leadership position in production, processing, and marketing agricultural and food products both on the national and international market.

Everything mentioned in this paper leads us to the conclusion that the importance of trademarks in the area of agriculture and food industry in the world is of high priority because compared to the industrial and other activities it participates in the range from 11% to 18%, i.e. on average with one-seventh (14%) of all the internationally applied and protected trademarks, in the period between 2015 and 2019.

Fact that a strategic orientation of our country is to become a full member of the European Union in the shortest possible time, should be used maximally by activating all the available domestic potentials. One of the most important preconditions in this process is to propose an agrarian program, which would secure a more favourable positioning of our agriculture and the entire economy in negotiations with the European Union.

The agricultural sector export restructuring with the emphasis on non-price forms of competition, such as the use and protection of trademark, especially the international protection via the Madrid Agreement should our most important national interest. These forms of non-price competition could become the main promoters of the Serbian economy and an expression of the country's identity, given that the image about a product quality indirectly projects to a country's reputation as well, as the Country-of-origin effect.

Conflict of interests

The authors declare no conflict of interest.

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GASTRONOMIC EVENTS IN THE FUNCTION OF CREATING A BRAND OF A TOURIST DESTINATION: THE EXAMPLE OF STRUDEL FESTIVAL IN DOLOVO

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ABSTRACT

Gastronomic events in recent years represent a very significant segment for the development of tourism. There are numerous events traditionally taking place in Vojvodina. Each of these events is unique and represents a rich variety of customs, culture and traditions. The authentic gastronomic offer, which is promoted through these events, is an important segment for creating a brand of a particular place and tourist destination. The aim of this study is to investigate the recognizability of the Strudel festival in Dolovo, as well as the authenticity of this gastronomic event, in terms of creating a brand of the tourist destination. The research was carried out using the survey method, through a questionnaire, on a sample of 150 respondents. Based on the collected data, using statistical methods of binary logistic regression, chi-square and Fisher's test, the analysis was performed and the results were presented. The results of the research show that the Strudel festival in Dolovo and its brand – strudels – have a high level of recognizability among visitors. However, the Strudel festival in Dolovo should be promoted more intensively, as it is currently recognized locally, and has the potential to attract more tourists.

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Introduction

In recent years, tourism has an important role in the economic development of every country.

Event tourism has developed greatly giving rise to a stronger development of tourism as an economic activity, and since the early 1980s it has been regarded as a separate industry.The event industry has been defined as "the systematic planning, development and marketing of festivals and special events, catalyst and image builder" (Getz & Wicks, 1993).

Event tourism is an important motivator for travelling and one of the fastest growing segments of the tourism industry. It is the result of the potential of the event to raise the level of tourist attractiveness, media coverage and promotion of the site and destination for future visitors (Backman et al., 1995).

Gastronomic tourism can be defined as "visitation to primary or secondary food producers, food festivals, catering facilities for food production and service and certain destinations for tasting and experiencing the attributes of regional specialties, where food is the primary motive for travel" (Hall & Mitchell, 1998). It can also be defined as "the activity of research and discovery of different cultures and histories through food, which can influence the formation of unforgettable experiences of tourists" (Long, 2004). Tourists are increasingly travelling to visit a particular destination, and the reason for this might be exactly the local specialties that are authentic and characteristic of the area or region. Gastronomic tourism can be a competitive advantage, as well as a unique feature in the branding of a particular country or region. A clearly defined gastronomic identity and heritage can be exploited in crucial processes of differentiation, helping to convey a unique sense of a tourist destination (Fox, 2007). Over the years, we have witnessed a growing number of events focusing on presenting the gastronomy of a certain area of the country.These are exactly where the opportunities for attracting a larger number of tourists, domestic as well as foreign, can be found. According to Stojanović et al. (2018), "through the affirmation of authentic food and beverages, any region can become a significant tourist destination, and one of the means to present and promote them can be through gastronomic events".

Gastronomic events

The research on food tourism, also known as culinary, gastronomic or gourmet tourism, has become increasingly important in recent years (Hall et al., 2003),which has lead to food-related events creating their own niche market and developing their own specialized organizations, thus taking on an important role in tourism as well. As stated by Wargenau & Che (2006), "the number of gastronomic events worldwide is constantly growing along with the interest in gastronomic tourism, representing a very interesting form of recreation and tourist attraction".

Show, festival, event, performance are simply different conceptual nuances that signify "a period of a certain program with a specific content that is attractive for tourist visits"

(Bjelac & Ćurčić, 2007). Event is unique due to the interaction that exists between the place where it is held and the visitors. Its appeal lies precisely in the fact that every gastronomic event is unique and that the visitor has to be physically present in order to be able to fully enjoy the event.Numerous researches show that they have not been aptly promoted, and they can give rise to the advancement of the economy, the region and the country as a whole.

Jovanović (2015) argues that "events or organized events, as a reflection of modern tourism, with regard to culture (music festivals, concerts, exhibitions, contests etc.), sports (regattas, water-skiing, etc.), tradition (carnivals, gastronomy, folklore, etc.), are gaining more importance in modern tourism". Over the past decade, events have become increasingly important for the growth of tourist traffic and the improvement of economic effects achieved through tourist activities; these events, due to their quality as well as quantity give special value to tourist destinations on both domestic and international tourist market (Stevanović & Malinić, 2016). Gastronomic events can serve as a means of promotion of the destination as a destination of gastronomic tourism. They can be used for the presentation but also the preservation of authentic food and drinks of a particular place, which are prepared in the traditional way. Čavić & Stojanović (2018), suggest that "every region that abounds in authentic gastronomic products should be represented and placed in the overall tourist offer of a certain country".

Gastronomic events reflect a special link between food, beverages, tourist events and travel. Authentic food at events is an instrument of connecting with visitors who, along with taking part in cultural activities, try gastronomic specialties distinctive of an area and become acquainted with the culture and traditions of the locals (Čavić & Mandarić, 2021). Gastronomic events can influence the creation of the awareness among consumers of brands they did not even know existed. The existence of awareness of certain gastronomic products and tourist destinations can influence visitors to prefer events of which they have more knowledge. Serbia has a rich and varied cuisine, which abounds in traditional specialties. In recent years, manufacturers have shown a strong tendency to protect products with geographical origin and invest in developing their brand. One of the ways to achieve that is through gastronomic events in Serbia. They attract and gather numerous individuals, who come to taste food and drinks, to observe or take an active part in the preparation of food and beverage, and to be entertained through the supporting cultural and artistic program or competition. Such events are usually held once a year in the same period, as they represent a kind of tradition.

Events as a factor of visits to a tourist destination

On the territory of the Republic of Serbia, there is a large number of traditional and authentic gastronomic products offered to tourists. Every year the number of events is increasing, and their main goal is to put on display the gastronomy of a certain tourist destination. Through the affirmation and promotion of events where authentic food and beverages are presented, every place or region can be turned into a noteworthy tourist destination. Events that exhibited gastronomic products used to be part of fairs and festivals, but this

began to change at the end of the last century. The creation of the so-called gastronomic tourism started through these unique events. Gastronomic events contribute to the national economy as the sale of gastronomic products and beverages generates significant material resources. Certain gastronomic products and beverages have become a brand both of the region and the country, and are internationally recognized (Stojanović, 2017). Mandarić & Stamenković (2017), state that "the attendance of a tourist destination and branding, through the development of event tourism, contributes to strengthening the competitive position of the destination itself, makes it easier to overcome the geographical distance, attracting new and retaining the existing tourists and visitors to the destination, while achieving favourable economic effects".

Furthermore, Stojanović et al. (2020), observe that "gastronomic events held in rural areas have a great promotional and entrepreneurial potential, as the gastronomic products from these events could be offered to local restaurants, as well as to retail chains, which would positively affect the revitalization of the rural area of a particular tourist destination". According to the "Strategy for the development of tourism in Serbia for the period 2016-2025", events are positioned in the second place as a tourist product of special importance for the development of tourism. Furthermore, this document positions gastronomic tourism among the common motives of tourists to travel to a certain place (http://mtt.gov.rs/download/3/strategija.pdf).

Branding of a destination and gastronomic event

Strategic brand management is a concept that includes the design and implementation of marketing activities aimed at building and managing brands. Branded products and services have characteristics that allow the consumer to differentiate them from other similar products and services. A branding strategy achieves an original or unique recognition of a product, service, person or group of people, concept, business model, event, company or institution and differentiates the offer in relation to the competition.

Holders of the brand can be people, objects, geographical destination, goods, services and others (Mandarić, 2016). Strong brands have become a source of market differentiation and sustainable competitive advantages and that's why brand management principles has greater application and geographical destinations (Jojić Novakovic & Mandaric, 2019). Branding of a destination provides continuous promotion of a country's tourism and increases the attractiveness of its tourism products. According to Veljković (2010), a destination brand can be defined "as a name, symbol, logo, word and / or other graphics that serve to identify and distinguish a destination from competitors. It promises the potential visitors an unforgettable experience of traveling to a particular destination; furthermore, it serves to consolidate and solidify the memories of beautiful experiences of those who have already been there". Modern brand management also incorporates the emotional component of experiencing a brand, which supports connecting the experiences of visitors to an event with the development of the destination brand (Mandarić, 2016). Various manifestations and gastronomic events can be the reason for a certain place to become the destination that will be chosen by both domestic

and foreign tourists. The brand becomes a key factor because it gives an additional value and a promise to potential tourists or visitors that they will experience something special in the destination, which is worth a visit (Perić & Mandarić, 2020). So, branding of a gastronomic event affect the perception and creation of the image of the tourist destination and it means that the recognizability of a gastronomic event brings potential tourists to a particular destination.

Significant qualitative changes have made the services sector more competitive in recent years. Professional branding in the service sector has contributed to standardization in service delivery. By building a brand, the consumer is able to more easily see the distinctive advantage in providing services to a particular company over its competitors. That is why more and more original, affirmative and driving ideas are the subject of branding. Original ideas can become manifestations that are characterized by specific slogans, symbols, concepts, etc. Organized events that attract a lot of media attention and a significant number of visitors are often branded. Numerous festivals and gastronomic events in our country are branded and their attractiveness attracts an increasing number of domestic and foreign guests from year to year. These are events suitable for placing marketing ideas and projects, and enable the transfer and spillover of the image to other strong brands (Mandarić, 2016). Creating unique and positive experiences represents a new development phase in marketing and branding. Gastronomic events have great potential to create authentic experiences for visitors and are in a position to create a strong brand as well.

The distinctive features of the gastronomical offer of Vojvodina

The gastronomical offer of Vojvodina includes authentic food and drinks, which are popularized and marketed through various gastronomic events, as well as through specific catering facilities such as isolated farms (granges), chardas, ethno restaurants, households.There are 27 nations living in the area of Vojvodina, with different customs, culture and traditions in everyday life. Each of them has its own authentic specialties, which make the gastronomic offer of Vojvodina a rich treasury of various gastronomic products. The number of events is large, and they include numerous distinctive features of an area and the people who live there. The event tourism of Vojvodina has been developing based on different economic activities, customs, beliefs, traditions, habits, in an ethnically and religiously heterogeneous area.That is how numerous festivals, events, fairs, exhibitions, gatherings and congresses were created, and with their programs and offer, they represent a significant tourist potential in the overall offer of Vojvodina and Serbia.They are different forms of performance, which contain certain artistic, entertaining, educational, cultural and other similar values important for Vojvodina.

Gastronomic events, which are frequently held in rural areas, are genuine protectors of tradition and perfectly present the typical food and the lifestyle of a particular nation. The number of international gastronomic events is small, but they still exist, which is important as the local food and beverages are presented to the tourists who encounter

the Serbian tradition for the first time. The number of events is Serbia is growing from year to year, and therefore it is assumed that the number of events important for the development of tourism will be even bigger in the future (Stanišić et al, 2018). As argued by Mandarić et al. (2017), "traditional gastronomic products, due to their character, quality and heritage, may become a regional brand and also promote the region as a unique destination of rural tourism".

Gastronomic event 'Strudel Festival in Dolovo' and strudel as the trademark of the event

Every autumn, always on the first Saturday in September, the event called "Dolovačka Štrudlijada" (the Strudel festival in Dolovo) is held in the village of Dolovo near Pančevo, organized by the Women's association "Dolovke". The event lasts for four days. On the first and the second day of the event a promotion is held in the city of Pančevo, on the third day is the opening of the exhibition of handicrafts of women from the association and various workshops, and the fourth day is when the main part of the event is held in the village of Dolovo (https://www.manifestacije.com).

The women's association in Dolovo was founded in 1977. In 2010 it was registered and has ever since been known under the name Women's association "Dolovke". With a new modern approach in its activities it has become one of the most active women's associations in the city of Pančevo. The association has about 50 members working on the preservation of Serbian traditions, organizing cultural and entertainment events, educating and encouraging women to take part in community service and charities. Accordingly, the association has numerous programs and activities not only in Dolovo, but throughout Serbia, where they present their creative work and their potential. The fact that the association has existed for such a long time is a rare case in our environment, especially taking into account the number of members. One of the goals of the Asociation "Dolovke" is the popularization of traditional dishes and cakes, and especially strudel as a local specialty. Throughout the year, the association promotes the event "Strudel festival of Dolovo", which is the brand of this region, at various events and fairs in Serbia. The women from the association represent themselves, their village as well as the city of Pančevo in the best way through their activities and work. They are a good example of how much can be achieved by joining forces. Part of the activities that the association realizes is through workshops, forums, conferences, various forms of education, visits to cultural and historical sites, charity work, supporting not only the women who are members of the association but other women as well to become stronger and take an active part in the life of the rural community.Through the work and commitment of all the members, this important event and its brand – the strudel – are preserved and fostered. The association participated in furnishing their premises and opened the Ethno Room in Dolovo, with authentic furniture and houseware, in order to show the right way to preserve the culture, traditions and customs of the region they live in (https://www.manifestacije.com).

In this picturesque place on the slopes of the Deliblato Sandsit is almost impossible to find a woman who does not know how to prepare this famous cake. The German women from Westphalia and Bavaria brought this skill to Dolovo, anhd the local women have brought this cake to perfection. They have preserved the recipe for this cake, passing it from generation to generation in order to preserve the tradition. The tradition of making strudel in Banat and Vojvodina has been present for a very long time. Sunday lunch includes a cake prepared traditionally here, and that is strudel. The Dolovo Strudel Festival has become well-known not only in the area of Pančevo and South Banat, but also in the whole of Vojvodina and Serbia. The strudel prepared in Dolovo has become a trademark of this event and of the whole place, as all the guests coming here say that such strudels can be tasted only in Dolovo. Recognizability and authenticity are the first words that come to mind when talking about Dolovo strudel, and therefore it can be said with certainty that it is the real brand of this event and this place (https://www.manifestacije.com).

The Dolovo Strudel Festival has received numerous awards, certificates and trophies so far and, most importantly, it has been branded with a trademark obtained from the Intellectual Property Office of the Republic of Serbia (http://reg.zis.gov.rs/regis/detail.php?entity=mark&lang=sr&file_nbr=2010_00001199). All this indicates that this event is extremely important for the preservation of the intangible cultural heritage of both Vojvodina and Serbia. This gastronomic event has been held for 20 years continuously, indicating that there is great interest and desire to include this traditional event and its brand – strudel – in the typical gastronomic offer of Vojvodina not only to domestic, but also to foreign tourists. The survey was conducted with the aim of better understanding of this event, in order to reach certain conclusions and recommendations for its better promotion and affirmation at a higher level than the present one.

Materials and methods

During the setting of the goals of the work and the structure of the research, the aim was to point out the importance of gastronomic events, with special attention being paid to one particular event – the Dolovo Strudel Festival. The research was carried out during the event in September 2019, using a questionnaire. The sample of the respondents consisted of 150 visitors, with intentional purposive sampling.

The survey questionnaire consisted of 10 open-ended and 12 closed-ended questions, clearly and precisely defined, in order to reach appropriate conclusions. The first part of the questionnaire referred to the socio-demographic characteristics of the respondents such as gender, age, education, as well as the place of residence. The second part referred to the knowledge the respondents had of the event itself, how they had learned about the event, what they thought was authentic, whether they found the program and the competition part interesting or not, what they were going to take from the event as a souvenir, what was the reason for coming and whether they were members of an association or visitors.The third part of the questionnaire referred to the Dolovo strudel itself, as the brand of the event. The sample included the members of numerous

associations present at the event, as well as visitors. The respondents were informed that participation in the research was anonymous and voluntary, and that the results would be used exclusively for scientific research purposes. All survey data were valid.

Descriptive statistical measures – frequencies and percentages – were used to describe the research sample. All the questions used are categorical questions. The method used was that of binary logistic regression. In order to examine the effect of several variables on one, logistic regression was used. The dependent variable is dichotomous, and therefore binary regression was used. The Chi-square and Fisher's test were used to examine the differences in statistical processing of the data. The chi-square test was used to examine differences in authenticity and brand in individual questions. Statistical package used was SPSS 22.0 ("*Statistical Package for Social Sciences for Windows 22.0*") (Leech et al., 2005, Pallant, 2011, Sheskin, 2004).

Results and discussion

The demographic characteristics of the respondents included gender, age and education. The results of the research show that the event was attended by a larger number of women (121 - 80.07%) compared to men (29 - 19.3%). In terms of their age, most respondents are over 50 years old (85 - 56.7%), then from 36 to 50 (38 - 25.3%) and up to 35 (27 - 18.0%). As for their level of education, the number of respondents who completed elementary and high school is the largest (94 - 62.7%), then college or university (47 - 31.3%), and the number of those holding a master's degree or PhD is the smallest (9 - 6.0%).

Table 1. shows the respondents' place of residence.

Table 1. Respondents' place of residence

Variables	Frequency	Percentage
Respondent's place of residence		
Pančevo	**40**	**26,7**
Dolovo	**50**	**33,3**
Belgrade	**15**	**10,0**
Kačarevo	**6**	**4,0**
Kovin	**7**	**4,7**
Starčevo	**8**	**5,3**
Bavanište	**6**	**4,0**
Omoljica	**7**	**4,7**
Novi Sad	**5**	**3,3**
Ivanovo	**6**	**4,0**

Source: Author's calculation based on SPSS 22.0

Table 1. shows the answer to the question 'What is the respondent's place of residence?'. In the sample of 150 respondents the largest number are from Dolovo 50 (33.3%), then from Pančevo 40 (26.7%), Belgrade 15 (10%)and a considerably smaller number from

other places. The results show that the event is mostly attended by the local population of Dolovo and the city of Pančevo, whereas the number of visitors from other parts of Serbia is much smaller.Based on the results, it can be concluded that the event should be more promoted in the whole of Serbia.

Through the research, we intended to determine the perception of Dolovo strudel as a recognizable brand. That was our criterion (dependent) variable, whereas we took two questions referring to the attractiveness of the event and the recognizability of the Dolovo strudel as predictor (independent) variables. The criterion variable is applied through question: 'Is the Dolovo strudel a recognizable brand?'coded as 'dummy variable' (categorical): 1- yes and 0 – no. The first predictor variable the attractiveness of the event has been applied using question: 'Do you think that this gastronomic event is attractive?', and the second the recognizability of the Dolovo strudel using question: 'Is the Dolovo strudel the most delicious Banat cake?'. Both predictor variables are dichotomous coded as dummy variable: 1- yes and 0 – no. The result is statistically significant; $\chi^2(2)=34.92$, p=0.00; which shows that the predictor variables significantly contribute to the interpretation of the criterion variable – the perception of the Dolovo strudel as a recognizable brand. The predictor variables interpret between 20.8 (Cox and Snell R^2) and 53.6 (NagelkerkeR^2) the variances of the criterion variable.

Table 2. Perception of the Dolovo strudel as a brand

	B	S.E.	p.	Exp(B)	95 confidence interval	
					Lower endpoint	Upper endpoint
Is the Dolovo strudel the most delicious Banat cake? (yes)	3.066	0.943	0.001	21.451	3.377	136.261
Do you think that this gastronomic event is attractive? (yes)	3.329	0.972	0.001	27.910	4.150	187.713
Constant	-1.644	0.916	0.073	.193		

Source: Author's calculation based on SPSS 22.0

Table number 2 shows that both predictor variables significantly contribute to the recognition of the Dolovo strudel brand, p<0.05. The respondents who consider the Dolovo strudel the most delicious Banat cake are more likely to accept it as a brand (OR=21.45; 95 CI=3.38-136.26; p=0.00) compared to those who do not think that the Dolovo strudel is the most delicious cake of Banat. The respondents who think that the Dolovo Strudel Festival is attractive are more likely to accept it as a brand (OR=27.91; 95 CI=4.15-187.71; p=0.00) compared to the respondents who do not think the festival is attractive.The competitive part of the festival is the evaluation of the strudels in different categories by the expert competition jury, followed by the announcement of the best strudels. It is very interesting for the members of associations as well as for the visitors, as they find out which strudels are really good.

The Fisher exact test was applied to recognize the differences between the respondents who consider the Dolovo strudel a recognizable brand and the respondents who do not share that opinion.

Table 3. Differences in terms of recognizability of the Dolovo strudel brand

		Is the Dolovo strudel a recognizable brand?				N		
		no		yes				
		f	**%**	**f**	**%**	**f**	**%**	p
Gender	male	2	20.0	27	19.3	29	19.3	0.612
	female	8	80.0	113	80.7	121	80.7	
Age	up to 35	1	10.0	26	18.6	27	18.0	0.515
	36 to 50	2	20.0	36	25.7	38	25.3	
	over 50	7	70.0	78	55.7	85	56.7	
Level of education	primary, high school	6	60.0	88	62.9	94	62.7	0.552
	college, university	3	30.0	44	31.4	47	31.3	
	Master's degree, PhD	1	10.0	8	5.7	9	6.0	
Is this event sufficiently promoted in your opinion?	no	4	40.0	26	18.6	30	20.0	0.144
	yes	6	60.0	114	81.4	120	80.0	
How did you learn about this event?	TV	5	50.0	23	16.4	28	18.7	0.075
	Internet	1	10.0	19	13.6	20	13.3	
	friends' recommendation	4	40.0	98	70.0	102	68.0	
In your opinion, is this gastronomic event authentic?	no	2	20.0	3	2.1	5	3.3	0.036
	yes	8	80.0	137	97.9	145	96.7	
What is authentic in this event?	strudels	7	70.0	97	69.3	104	69.3	0.634
	program of the event	2	20.0	36	25.7	38	25.3	
	competition	1	10.0	7	5.0	8	5.3	
Have you tried Dolovo strudel before?	no	2	20.0	27	19.3	29	19.3	0.612
	yes	8	80.0	113	80.7	121	80.7	
Which strudel do you like tasting most?	poppyseed strudel	8	80.0	82	58.6	90	60.0	0.317
	walnut strudel	1	10.0	37	26.4	38	25.3	
	carob strudel	1	10.0	9	6.4	10	6.7	
	fruit filling strudel	0	0.0	9	6.4	9	6.0	
	strudel with savory filling	0	0.0	3	2.1	3	2.0	
Is the Dolovo strudel the most delicious Banat cake?	no	8	80.0	17	12.1	25	16.7	0.000
	yes	2	20.0	123	87.9	125	83.3	
Is the cultural and artistic program of this event well designed?	no	1	10.0	2	1.4	3	2.0	0.188
	yes	9	90.0	138	98.6	147	98.0	
Are you at this event as a visitor or a member of an association?	Association	5	50.0	81	57.9	86	57.3	0.745
	Visitor	5	50.0	59	42.1	64	42.7	
Is this gastronomic event attractive?	no	6	60.0	5	3.6	11	7.3	0.000
	yes	4	40.0	135	96.4	139	92.7	

Do you like the idea of a collective wedding in this event?	no	1	10.0	7	5.0	8	5.3	0.432
	yes	9	90.0	133	95.0	142	94.7	
What are you taking as a souvenir from this event?	strudels	4	40.0	80	57.1	84	56.0	0.084
	handicrafts	0	0.0	16	11.4	16	10.7	
	memories	6	60.0	44	31.4	50	33.3	
The reason you visited this gastronomic event?	socializing	7	70.0	81	57.9	88	58.7	0.525
	strudels	1	10.0	40	28.6	41	27.3	
	curiosity	2	20.0	19	13.6	21	14.0	

Source: Author's calculation based on SPSS 22.0

The findings of the Fisher test show that the respondents who think that the Dolovo strudel is a recognizable brand considerably differ from the respondents who do not think so, according to how they answered the question: 'In your opinion, is this gastronomic event authentic?'; p=0.04. The respondents who consider the Dolovo strudel a recognizable brand also consider this event authentic (94.5%). Answering the question 'What is authentic in this event?' 69.3% said 'strudel', followed by 25.3% answering 'program of the event', whereas only 5.3% 'competition'. This indicates that strudels are indeed the brand of this event, in terms of authenticity for the respondents.

Answering the question 'Is this event sufficiently promoted, in your opinion?',80% of the respondents said YES, whereas only 20% said NO. That is a clear indication of a high level of the promotion of this event. It is interesting to note that, when asked 'How did you learn about this event?', 68% of the respondents said they were informed through friends' recommendations, followed by 18.7% who heard about it on TV, and only 13.3% heard about it from the Internet. Friends' recommendations and personal experience of those who have already visited this event and formed a positive attitude and perception are the best recommendation for the new visitors.

The findings of the Fisher test show that the respondents who think that the Dolovo strudel is a recognizable brand considerably differ from those who do not share the same opinion, according to how they answered the question: 'Is the Dolovo Strudel the most delicious Banat cake?'; p=0.00. The respondents who consider the Dolovo strudel a recognizable brand mostly think that the Dolovo strudel is the most delicious cake of Banat (87.9%). Replying to the question 'Have you tried the Dolovo strudel before?',80.7% of the respondents said YES, and 19.3% said NO. The respondents who said YES had already visited this event before, and those who said NO came for the first time and had not had the chance to try it before. 'Which strudel do you like tasting most?' has provided us with the answer which kind of strudel is the most popular and in greatest demand. The poppyseed strudel is the most popular, which was confirmed by 60% of the respondents, followed by walnut strudel according to 25.3% of the respondents,whereas the remaining three types of strudel attracted considerably lower interest among the respondents, and they are carob strudel 6.7%, fruit filling strudel 6.0% and strudel with savory filling 2.0%.

The findings of the Fisher test show that the respondents who think that the Dolovo strudel is a recognizable brand considerably differ from those who are not ofthe same opinion, according to how they answered the question: 'Is this gastronomic event attractive?'; p=0.00. Those who think that the Dolovo strudel is a recognizable brand mostly like the competitive part of the event (96.4%). Answering the question 'Is the cultural and artistic program of this event well designed?', 98% of the respondents said YES, and only 2.0% NO. This is an indication that the program of the event(cultural-artistic, exhibitions, sales, competition) is of great importance for this event. The respondents in the survey were members of various associations (86 - 57.3%) and visitors (64 - 42.7%), with the aim to receive the answers from two different standpoints. The novelty at this event was the organization of a collective wedding, and answering the question 'Do you like the idea of a collective wedding in this event?' 94.7% of the respondents said YES, and only 5.3% said NO. Therefore, it can be concluded that the visitors liked the idea, as the newlyweds tasted the Dolovo strudel as their wedding cake after the wedding ceremony. When asked 'The reason you visited this gastronomic event?', the respondents answered that it was mostly in order to socialize 58.7%, considering the fact that in such gastronomic events the members of associations and the visitors socialize and exchange experience; 27.3% said the reason were strudels, and 14.0% said that the reason for coming was curiosity as they had heard of this event. Replying the question 'What are you taking as a souvenir from this event?' the most common answer was 'strudels' (56.0%), followed by 'memories' (33.3%), and 'handicraft' (10.7%).

The results of the survey show that the gastronomic event Dolovo Strudel Festival is for the time being recognizable mostly on the local level, as there are not many visitors from other parts of Serbia. Through a better promotion using Internet presentations, TV shows, tourist organizations, the current situation can be improved and a larger number of participants from different associations as well as more visitors can be attracted. The Dolovo strudel is certainly a recognizable brand of this event and it is indeed authentic and well accepted by visitors, which is clearly indicated by the results of this survey. However, this should be used as a good basis for further development and improvement of this event, because in addition to local and regional, it can also have international significance from the aspect of gastronomic tourism.

Conclusions

Gastronomic events represent an important incentive for tourists to visit a particular destination. Many gastronomic events are of local character, such as the Dolovo Strudel Festival, but by fostering and preserving the traditional specialties they can have a significant role in tourist traffic. In addition to attracting tourists to the place where an event is taking place, gastronomic events can also create a distinctive image and brand of the destination, which can further motivate numerous tourists. Events are of great importance for associations trying to preserve authentic food and beverages, but also for all other catering facilities, as these events can attract a large number of locals, as well as tourists, and thus have significant economic implications.

The results of the survey show that this Festival a unique gastronomic event. The Dolovo strudel as an authentic brand of this event attracts the attention of a large number of visitors, but at the local level for now. The women's association 'Dolovke' should intensify the promotion and affirmation of this event and its brand strudel, not only in the city of Pančevo and the surrounding area, but also in other parts of Serbia. It is advisable to make more use of tourist brochures and gastronomic guides, with a detailed description and photographs from the event, as it would attract a larger number of visitors to this gastronomic event.Furthermore, it is necessary to pay more attention to practical souvenirs made in the form of edible gifts, which can be taken from the event and present in a great way the event and the region to the potential visitors.For the purpose of future research and for potential tourists, it is necessary to improve the editing of the data on the websites of tourist organizations, as they are not regularly updated and therefore create confusion. Improved promotion and the arrival of a larger number of visitors can have significant economic impact on the city of Pančevobecause, in addition to attending the event, the visitors could come to see other sights, catering facilities, as well as other interesting sites in this tourist destination. Moreover, the tourist organizations of Serbia, Vojvodina and the city of Pančevo could design a tourist route, which would include the visit to Dolovo Strudel Festival and offer the domestic and foreign tourists a longer stay in this tourist destination. A better promotion and a more complex tourist content would certainly enable the Dolovo Strudel Festival to enrich the gastronomic offer of the city of Pančevo as a tourist destination, and at the same time the overall gastronomic offer of Vojvodina and Serbia.

Conflict of interests

The authors declare no conflict of interest.

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ANALYSIS OF WHEAT PRODUCTION IN THE REPUBLIC OF NORTH MACEDONIA FROM 2016 – 2019

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ABSTRACT

Corn, wheat and other different types of cereal crops, are one of the basic nutritional products in general, which have essential and vast application in the daily diet of people around the world. Cereal crops are the most important food sources, and cereal-based food is the main source of energy, protein, B vitamins and minerals for the world population. Therefore, the goal of this research is to analyze the production of wheat on arable land in the Republic of North Macedonia, as an agricultural country, which will indirectly help to draw conclusions about the impact on the economic structure of the population, their standard of living, the investment and economic fluctuations in market prices, taken as a sui generis element, set as an assumption ceteris paribus against the other determinants and factors that affect the national economy in the Republic of North Macedonia.

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Introduction

Corn, wheat and other different types of cereal crops, are one of the basic nutritional products in general, which have essential and vast application in the daily diet of people around the world. From time immemorial, when the human didn't have any developed refined tastes or methods of food processing such as the ones that are available to us today, cereal crops have been one of the basic food products on the table. Cereal crops can be defined as the grain or seed of the family of grasses Gramineae (Bender and Bender,1999; McKevith, 2004)

In addition to being used for human consumption, cereal crops, such as oats, wheat and barley, also constitute the basic diet for livestock, which is being raised in order to process various types of meat and meat products, as well as for milk and dairy products. Thereby cereal crops are again, this time indirectly, the basis of human nutrition. By manipulating different types of cereal crops, the human has learned that livestock can reach greater weight in a shorter period of time when being fed with cereal crops (a fact that the entire basis of stockbreeding rests on). This again leads to an indirect correlation with the production of cereals. Based on all abovementioned, cereal crops are the most important food sources (FAO 2002), and cereal-based food is the main source of energy, protein, B vitamins and minerals for the world population. (FAO, 2002).

In modern dietary trends as well, which in recent years are increasingly becoming more popular (vegetarianism, veganism, etc.), and are based on the exclusion of meat and dairy products in the daily diet, cereal crops, in addition to vegetables and fruits, are increasingly becoming more important as a major source of nutrients, but also a source of fibers which are the basic structural units of every cereal crop. Cereals are strategically important and the most grown crops, but the country does not produce enough to meet the domestic needs. (National programme for agriculture and rural development 2007-2013, 2007).

In our region, the Republic of North Macedonia, as well as in the Balkans in general, pastries and bread (mainly made from wheat grain) are still the basic products on the table in the daily diet. For a national economy to be stable and prosperous, it is necessary to meet the basic needs of the citizens as well as most of the basic products in the "basket of consumer goods of the household" by means of the country's own production resources. Hence, the production of milk, dairy products and wheat, sufficient to meet the needs of the country's population, is one of the fundamental postulates of agricultural economics as a part of the overall national economy in the Republic of North Macedonia.

Therefore, the goal of this research is to analyze the production of wheat on arable land in the Republic of North Macedonia, as an agricultural country, which will indirectly help to draw conclusions about the impact on the economic structure of the population, their standard of living, the investment and economic fluctuations in market prices, taken as a sui generis element, set as an assumption ceteris paribus against the other determinants and factors that affect the national economy in the Republic of North Macedonia.

Methodological framework

For the needs of this paper, a number of scientific papers from different fields have been read and analyzed, especially in the field of agricultural economics, agriculture and economy in general. The findings and final results presented in this paper are the result of induction and deduction, as well as the synthesis and analysis of numerous pieces of information, and descriptive statistics, comparative analysis and correlation analysis.

According to the geographical position, the Republic of North Macedonia is located between 40°51' and 42°22' north latitude, and between 20°27' and 23°02' east longitude. According to these geographical parameters, the country is located in the southern part of the temperate zone and is bordered by the sub-tropical climate zone, which allows the production of a large number of crops. (Smith, 2003). The Republic of North Macedonia has 280 sunny days annually on average, which makes it the second in the world with the so-called highest quality "solar energy peak" (the so-called "peak of solar energy" in the Republic of North Macedonia reaches from 1380 to 1520 kilowatt hours of solar radiation per square meter). The favorable geographic position and the mild continental and Mediterranean climate contribute to the production of cereal crops and wheat to become one of the basic production branches, as well as an ideal profession for many entrepreneurs and investors (domestic and foreign), individual farmers and hired workers. In the Republic of North Macedonia, agriculture has a key role in the development of the national economy, as the third largest sector, just behind catering and industry. The total share of agriculture as a sector in the GDP of our country has been increasing continuously, i.e. in 2016 it amounted to 885.8 million Euros, in 2017 it was 790.3 million Euros, which is recorded as the only decline in the share of agriculture as a branch in GDP, mainly due to poor weather conditions, then, in 2018 it was 901.9 million Euros, and in 2019 it reached 910.9 million Euros.

According to the data of the State Statistical Office (SSO), agricultural land covers approximately 1.266 thousand hectares, which is 49% of the total area of the Republic of North Macedonia. Of this area, almost half is arable land, and the other half is used for pastures.

Table 1. Participation of agriculture as a sector in the national economy

Indicator	2016	2017	2018	2019
Gross value added (GVA) of agriculture	885,8 million Euros	790,3 million Euros	901,9 million Euros	910,9 million Euros
Participation in the gross domestic product (GDP)	9,1	7.9	8,5	8,1

Source: MakStat (available at: http://www.stat.gov.mk/Default.aspx)

Of the agricultural arable land, gardens and arable lands sown with cereal crops have the highest share. Although the exact number varies each subsequent year, there is no significant percentage difference i.e. there is no drastic decline in the production of

cereal crops compared to, for example, the production of garden crops, therefore in 2017, the total number of arable agricultural lands sown with cereal crops amounted to 167.623 hectares, which is about 33% of the total arable land in the Republic of North Macedonia. The most cultivated and most represented cereal crop in the Republic of North Macedonia is wheat, which from a statistical point of view, and by comparative analysis throughout the years, occupies about 40% of the total agricultural area sown with cereal crops. (Agrounija, 2019). The largest quantities of wheat and the largest number of agricultural arable land sown with wheat, have always been in the Pelagonija region of the Republic of North Macedonia, in the Pelagonija valley, which is spread in the southwest part of the country. According to the data summarized in the National Strategy for Agriculture and Rural Development 2014 - 2020, the Pelagonija region stands out as a region with the most significant share in the GDP in agricultural production, with a significant 21%. (Republic of North Macedonia, 2014)

Table 2. Arable land in the Republic of North Macedonia in the period from 2011 – 2018

Pointer	2011	2012	2013	2014	2015	2016	2017	2018
Agricultural Land	1.12	1.268	1.261	1.263	1.264	1.267	1.266	1.264
Arable Lands	511	510	509	511	513	516	517	519
Arable Lands and Gardens	4.15	414	413	413	415	417	417	418
Orchards	14	15	15	15	16	16	16	17
Vineyards	21	21	22	23	23	24	24	24
Meadows	61	60	59	60	60	59	60	60
Graizing areas	608	757	751	751	750	750	748	745
Ponds, Reeds and Fishponds	1	1	1	1	1	/	1	1

Source: State Statistical Office

By analyzing the producers of wheat in the Republic of North Macedonia, if we make a deductive analysis of the chart presented below, we could come to the conclusion that these are rather individual farmers and small agricultural holdings. Large agricultural holdings are less and less common, hence we can summarize that most of the agricultural holdings in our country are tiny, small and non-commercial, as well as individual farmers as independent agricultural economic entities, according to the Law on Agricultural Activity. In the table below, you can see quarterly data on the purchase of agricultural products, which in the Republic of North Macedonia is performed mostly by individual agricultural producers, as well as data on the purchase of wheat, given by months for 2019, therefore one can conclude that mostly individual agricultural producers are engaged in the production of this cereal crops.

Table 3. Purchase and sale of agricultural products, by months, quarterly report

	VII 2019	VII 2019	IX 2019
Total purchase	1.267.508,00 tons	1.189.054,00 Tons	1.815.441 tons
Purchase from individual agricultural producers	557.724,00 tons	651.283,00 Tons	1.127.076 tons
Purchase and sale of wheat and rye	26.977,00 tons	16.899,00 Tons	2.016 tons

Source: MakStat report no.5.1.20.14

Table 4. Areas and production of cereal crops in the Republic of North Macedonia in the period from 2016, 2017 and 2018

	2016	2017	2018
Sown areas (in ha)			
Cereal crops	165,459	161,289	166,664
Wheat	79,898	72,965	73,072
Production (in tons)			
Wheat	306,433	200,112	241,106
Yield (t/ha)			
Wheat	3,8	2,7	3,4

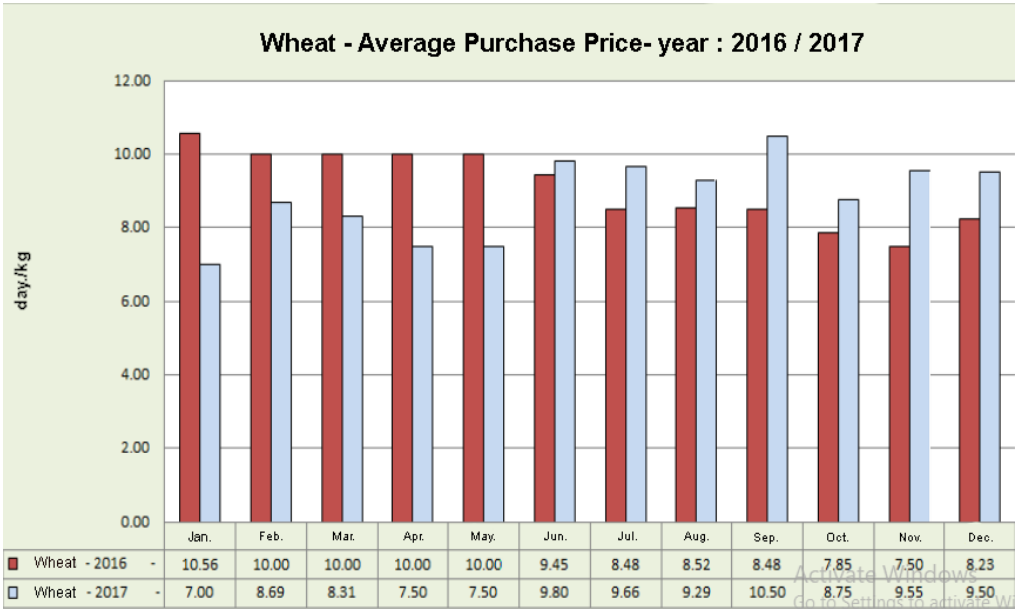
Source: State Statistical Office

By analyzing the data contained in *Table* 3, we can conclude that in 2017 there was a downward trend in terms of the representation of wheat and cereal crops in general in the domestic production. Wheat production in 2017 amounted to about 200.112 tons, which is a decrease by as much as approximately 35% compared to 2016, which is certainly a result of reduced average yield per hectare by about 28%, and reduced areas under wheat plantations by about 9% compared to those in 2016. On the other hand, in 2018, wheat production has evidently increased and amounted to 241.106 tons, which is an increase by about 21% compared to the so-called "bad" 2017, and it is in direct linear proportional correlation with the increased average yield per hectare which is 23.7%, i.e. the increased areas planted with wheat. The line of wheat import is inversely proportional to these upward lines of increase in wheat production.

In terms of **import**, in 2017 the import of wheat in the Republic of North Macedonia increased by as much as 51.7% (State Report on Agriculture and Rural Development for 2017 - Ministry of Agriculture, Forestry and Water Economy), i.e. a total of 4.4 million Euros were allocated from the state budget for the import of this good, which is by 1.5 million Euros more than the previous year, when we spent a total of 2.9 million Euros on wheat imports. As a consequence of the increased production of wheat in the next year, in 2018 there was a decrease in wheat import - from 4.4 million Euros to only 1.8 million Euros, which is a decrease in wheat import by an incredible 59% compared to the previous year. If, statistically observed from the presented data, we take 2017 as a "bad year" for wheat production, where we increased import by 51.7%, the fact that the

following year we reduced import by 59%, puts the Republic of North Macedonia in an arbitrary economic situation, because not only have we covered the negative balance in terms of wheat production and the dependence on the imports from the previous year, but also, compared to the purchase price of wheat, which grew in 2018 and 2019, this positively affected its own market with the increased production, i.e. instead of reducing the price due to the increased production, the price of wheat grain increased despite its increased production. In 2019, wheat was sown on approximately 70.500 hectares, and the average yield per hectare was about 3.5 tons, depending on the region, which is an increase by about 4% compared to 2017. The low yield of wheat in 2017, as well as cereals in general was due to the unfavorable weather conditions, which contributed to the decline of the average annual purchase price of wheat in 2017 by 2.8% compared to the prices in 2016, that is, from 9.09 denars per kilogram it reduced to 8.84 denars per kilogram of wheat grain.

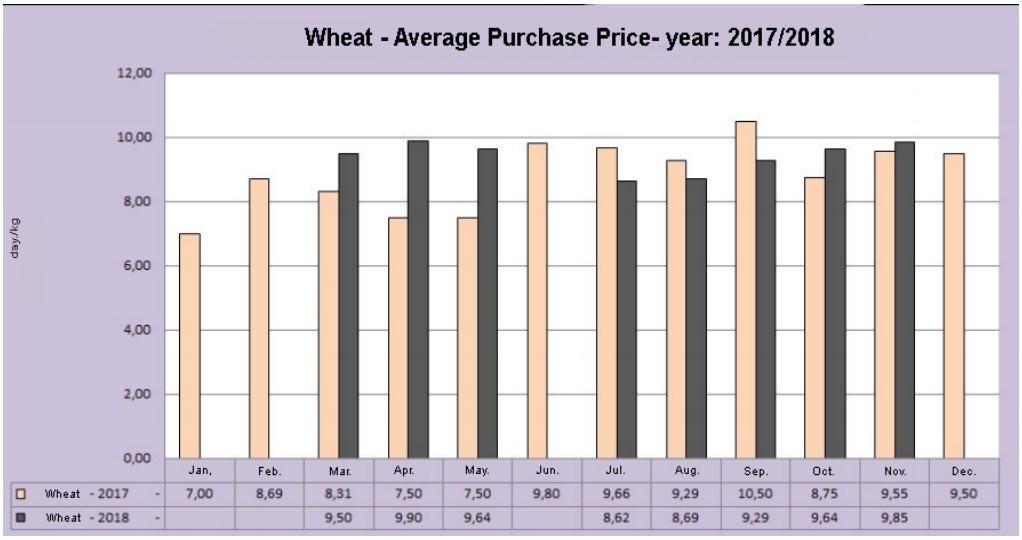
Figure 1. Average purchase price (in denars) of wheat in 2016/2017



	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Wheat - 2016	10.56	10.00	10.00	10.00	10.00	9.45	8.48	8.52	8.48	7.85	7.50	8.23
Wheat - 2017	7.00	8.69	8.31	7.50	7.50	9.80	9.66	9.29	10.50	8.75	9.55	9.50

Source: Agricultural Market Information System

Figure 2. Average purchase price (in denars) of wheat in 2017/2018 – Agricultural Market Information System

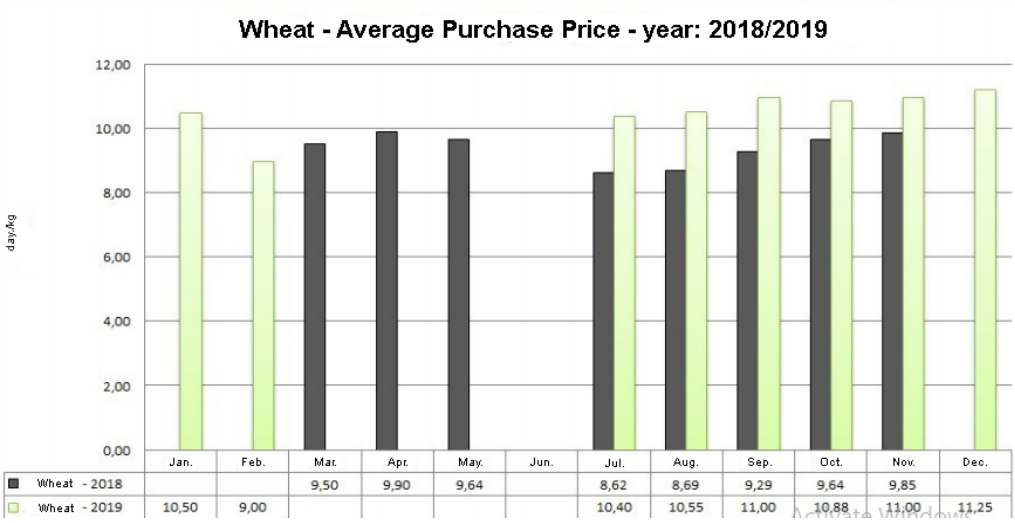


	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Wheat - 2017	7,00	8,69	8,31	7,50	7,50	9,80	9,66	9,29	10,50	8,75	9,55	9,50
Wheat - 2018			9,50	9,90	9,64		8,62	8,69	9,29	9,64	9,85	

Source: Agricultural Market Information System (AMIS), Retrived from: http://zpis.gov.mk/

By analyzing the results from Graph 1, it can be concluded that the average purchase price of wheat grain in 2018 was 9.39 denars per kilogram, which compared to the price in 2017, which was 8.84 denars per kilogram of wheat on average, is an increase of the wheat grain price by 6.2%. In addition, by analyzing the time continuity and prices, we can conclude that by the end of the year, there is an absolute increase in the purchase price of wheat grain, i.e. in January 2017, the price was 7.00 denars per kilogram, while in December of the same year - 9.50 denars per kilogram, which is a significant increase, probably because in December there is no domestic wheat for purchase.

Figure 3. Average purchase price (in denars) of wheat in the period 2018/2019



Source: Agricultural Market Information System (AMIS), Retrived from: http://zpis.gov.mk/

The purchase price of wheat tends to increase, i.e. in 2019 until December it was 10.85 denars per kilogram, which, compared to the average purchase price with the harvest of 2018, which was 9.39 denars per kilogram, is an increase of the price by about 12.6%.

By summarizing the analyzed data, we can conclude that, not looking at the results of 2017, by isolating this year due to bad weather conditions for the entire agriculture, and not only for wheat and cereal crops, we can say that in the Republic of North Macedonia there is a visible tendency to increase wheat production, and this interest is particularly increasing among individual agricultural producers, whose number is constantly growing, and also due to the increased purchase price per wheat grain, which is also on the rise. For this reason, the Republic of North Macedonia does not need to import wheat, and moving at this pace, the export of wheat grain can only be increased. These favorable factors are also observed in other crops, a characteristic that is due to favorable production conditions, dictated by the favorable geographic and climate position, as well as the agricultural development policies, the European Union investment funds, integrated in our society through the Agency for Financial Support of Agriculture and Rural Development and the IPARD funds[7] provided by the European Union.

An additional step forward was made on 17.12.2005 with the acquisition of candidate status for membership in the Union, which contributed for this country to gain access to the Instrument for Pre-Accession Assistance (IPA).

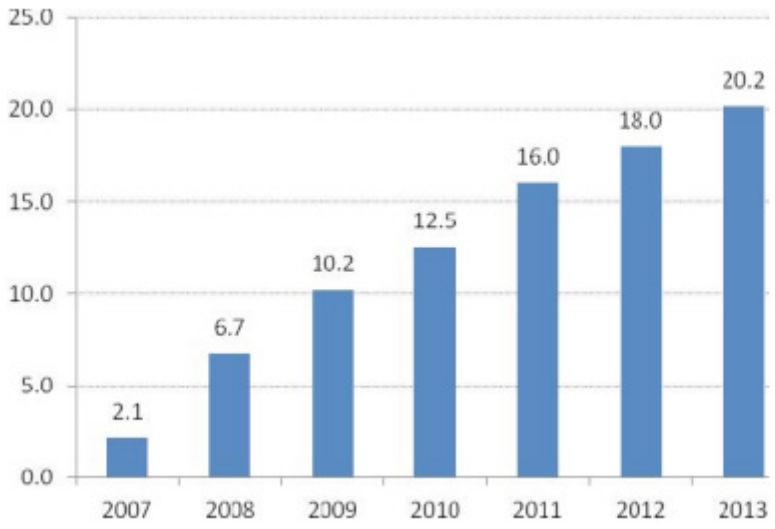
7 Instrument for Pre-Accession Assistance for Rural Development

Table 5. Areas and production of cereal crops in the Republic of North Macedonia in the period from 2011 to 2015

	2011	2012	2013	2014	2015
Sown areas (in ha)					
Cereal crops	160,994	161,126	166,436	160,988	159,434
Wheat	78,588	79,750	81,756	76,861	73,979
Production (in tons)					
Wheat	256,103	214,963	258,960	287,594	201,218
Yield (t/ha)					
Wheat	3,35	2,7	3,2	3,76	2,75

Source: Annual Agricultural Report 2015, https://www.stat.gov.mk/pdf/2021/5.1.21.03_mk.pdf

Figure 4. Distribution of IPARD investment funds in millions of Euros (European Commission. 2012. Multiannual Indicative Financial Frame)



Source: Kovachev, 2013

The European perspective of the Macedonian agriculture and rural development started on 09.04.2001 with the conclusion of the Stabilization and Association Agreement of the Republic of Macedonia with the European Union (EU) which, among other things, liberalized trade and enabled an asymmetric trade regime in the trade in agricultural products for the benefit of Macedonia (except for the so-called "sensitive products") in a transition period of 10 years.

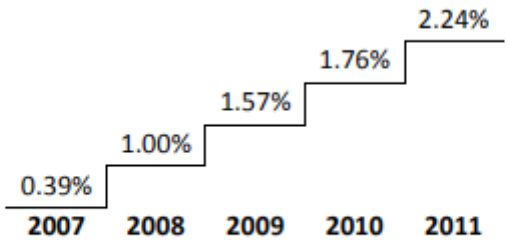
In Graph 4 it can be seen that with the inflow of the IPARD funds and their availability to agricultural producers across the country, the interest for their use has been growing rapidly, and logically and normally, the interest for engaging in agriculture as a branch has been growing as well, which is becoming more profitable, and at the same time,

agriculture is expanding and simplifying, thanks to access to more funds. It can be noticed that in the period from 2007 to 2013 the inflow of the IPARD funds in our country increased by an incredible 90%. Accordingly, in the context of our central interest in this topic, we can conclude that although there is no vast increase in wheat production, investments are made in simplified ways of production and agricultural mechanization, as well as in purchase and production, i.e. in creating varieties of wheat grain of better quality - and our country has been extremely successful in this field. One of the leading companies in the Republic of North Macedonia - has produced several varieties of wheat that provide quality and increased production, some of which include the following: (Zelena berza, 2016)

- Agrounija prima
- Makedonska rodna
- Balkanija
- Makedonska rana
- Improved Orovchanka
- Kralica (Queen)
- Vulkan (Volcano)
- Amazon
- Simonida
- Mojson

From this financial aspect, one can absolutely observe the increase of investments in the agricultural sector, which has a constant and significant growth, and this is the reason for the growth of the production quality.

Figure 5. Allocated IPARD funds in regard to the GDP within agriculture by years, State Statistical Office



Source: Kovachev, 2013

The President of the Agro-Business Chamber emphasized that the innovative approach in the development of the internationally recognized wheat varieties is what moves them forward and maintains them all these years. A novelty is that from 2019, for the

first time two Macedonian varieties of wheat and one variety triticale created in one of the leading companies will be added in **the European catalog of varieties**, which means that the grains can be sold in European Union countries, which is an additional factor that would contribute to the obvious increase of the role of agriculture in the increase of the GDP of our country.

It is a matter of the varieties

- "Ostaka", which is recognized in the Republic of Greece, the Republic of Serbia and the Republic of Bulgaria, and
- "Triticale", recognized and demanded in the Republic of Serbia and the Republic of Bulgaria. (Denar, 2019)

From the abovementioned it can be concluded that the production of wheat, and other cereal crops in general, is a very important branch in the national economy of the Republic of North Macedonia. Due to this fact, constant support for the producers of cereal crops is needed, that is, financial support in order to improve the production (purchase of new and modern machinery, purchase or rent of new arable land, visits to agricultural fairs in the country and abroad), but also support from science that will include the creation of new varieties that will provide higher yields and will be more resistant to diseases. In addition, the support from science should be based on continuous education of producers, aimed at proper cultivation of of cereal crops, timely response to the emergence of diseases, proper use of means of protection, as well as familiarization with new varieties and their advantages compared to the other varieties. All of this will have a significant contribution in the increase of the domestic production, reduced import, and possibility for export, which in any case will have a favorable impact on the national economy of the Republic of North Macedonia (Hadzi Naumova-Mihajlovska et al., 2018).

Conflict of interests

The authors declare no conflict of interest.

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ECONOMIC POTENTIAL OF AGRO-FOOD PRODUCTION IN THE REPUBLIC OF SERBIA

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ABSTRACT

This research conducted a structural and analysis of the foreign trade position of the Republic of Serbia, with special emphasis on agricultural and food products, in order to provide detailed information regarding current trends, measuring the level of comparative advantage and international position in the world and European markets. The obtained results indicate the elements that have a limiting effect on the development of this type of production. Using the RCA Index methodology and the Lafay's Index, the link between the food industry and the character of industrial exchange was established, which is measured by the Grubel Lloyd's Index. The structure of exports was analyzed from the aspect of factor intensity, so the existence of negative values of a comparative advantage and intensive goods was confirmed. Finally, we believe that the results obtained have contributed to the unraveling of available instruments, the eventual efficient use of which would help rural development, and thus the overall economic development of the Republic of Serbia.

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Introduction

Dealing with the research of the competitiveness of the domestic economy in relation to European and world developed countries, it actually represents a detailed and structural analysis of macroeconomic, as well as microeconomic, indicators. When it is said that the economy of a certain country is a competitor, then it refers to competition in improving productivity in accordance with the modernization of existing technology, but also the application of new technologies. Moreover, development directly affects the creation of new added value and innovation, but also the proper and efficient economic development of the entire macroeconomic environment. (Popescu et al., 2017) Analyzing Proag's research (2014), it can be established that global economic competitiveness is the result of a relatively new economic paradigm, whose name has become widespread in the last decade - a sustainable economy. In this regard, it is necessary to link multiple concepts of competitiveness and competitiveness at the national level. (Rose and Liao, 2005). Rutkauskas (2008) argues that a competitive economy makes the most efficient use of available resources, which are in fact its main elements of competitiveness. The process of improving the production factors is actually improving competitiveness, with the aim of increasing economic activity, which requires a larger volume of investment in the economy and a focus on its production oriented as foreign trade.

Authors IIlmaz and Ergun (2003) analyzed the comparative advantage of exports in EU candidate countries, in order to more precisely define international activity. In that sense, Ferto and Hubart (2002) point out the necessary changes in the structure of agriculture, and then in the food industry, which would not be possible without state support. Similarly, Serin and Civan (2008), Erlat and Erlat (2012), as well as Toming (2008) point out the factors of non-price competitiveness in the market in modern conditions. As the essence lies in product quality, investments in product development are urgently needed to achieve their desired level of comparative advantage. Also, recent research provides similar findings: Ceilan et al. (2018) in their analysis claim that even in conditions of pronounced competition in the market, it should be intensified with the export of products with high added value.

According to Andrei et al. (2020) agricultural trade is a way to achieve the full national agricultural potential in highly competitive modern economies. Similarly, Brodovska-Szevczuk (2019) stated that the main instruments of competitiveness are the implementation of new products or services, as well as improving the quality of these products and services. If we talk about Serbia, in their earlier research, Ignjatijević et al. (2012) considered the competitiveness of the food industry. Concluding that it is only partially competitive, the authors conclude that the existence of a comparative advantage with a negative sign is a consequence of inefficiently solved or completely unsolved problems, which arose in the long process of transition and oscillations in production quality.

The first part of the paper includes an introduction to the research issues, with reference to previous research, the importance of previous results, some of which are used below as a

reference basis in the acquired knowledge. Furthermore, after the presented methodology used in the research, and a brief description of macroeconomic parameters (2016 to 2020), we have analyzed the results which are obtained in the research. In the concluding part, we have summarized the aim of this article as well as scientific contribution of it.

Literature Preview

On the other hand, although Gechabia et al. (2019) investigated the elements of innovative marketing that is applied in agribusiness, it should be noted that the starting points were formed precisely on the economic stimulation of foreign trade, and its impact on the development of the food sector within agriculture.

Monaco et al. (2017) in their paper refer to the monitoring and study of the combination of the Market Orientation Index (MOI) and the Economic Balance Index (EBI), based on which the typical characteristics of agro-food systems in Western countries are confirmed, which are strong specialization in developed sectors, mainly by allocating products to global markets, and others that are more or less targeted at local and regional markets. However, based on the evidence presented in this paper, reconnecting and adjusting food supply and demand may be at odds with broader economic improvements in regional production. At the same time, measuring the economy with current values and market prices fails to adequately capture the effects of non-market goods and values on regional economic sustainability, which are not proposed in the assessment - such as healthy food or clean rivers.

The modern food market directs the development of organic production. It is defined by many factors, among which distrust in genetically modified products should be singled out; health risks that arise in mass production; promoting environmental technologies in production; organic production (Sapic et al, 2018; Voronkovoa et al., 2019; Poltarikhin et al., 2018; Vujić et al, 2019). Observed from the aspect of ecologically acceptable and economically viable potential of the region, which bases its production on organic agricultural production, it is possible to expand the volume of production and improve the level of competitiveness (Korableva et al., 2018). However, the development of sustainable economic mechanisms plays a key role in this endeavor.

When it comes to testing data using the RCA Index, in the example of Bulgaria, Ignjatijević et al. (2021) presented a high share of food products in the export of this country of the country, which contributed to the creation of a positive value of comparative advantage. The study of the results of the comparative advantage of the export sector as a whole, but also only of the food sector, points to the following: the comparative advantage of the export sector as a whole indicates a reduction of RCA Index in 2017, ten years after the accession of Bulgaria to the EU.

According to Đukić et al. (2017) high levels of RCA Index, Revealed Competitiveness (RC) Index, and Additive Revealed Comparative (ARCA) Index for Serbia show significant competitive advantages of the agro-food sector. These values are higher than in neighboring countries which are members of the European Union, and they are

the result of a significant share of agriculture in GVA (gross value added), as well as the high share of exports of agricultural products. In contrast, the export structure of agro-food products from Serbia is unfavorable (raw materials and products with a small degree of processing).

Đukić et al. (2020) stated that Serbian foreign trade indicates an unfavorable structure of exports when it comes to agricultural and food products. The structure of exports, in which raw materials, i.e. primary agricultural products, dominate, is a feature of the underdeveloped agricultural sector. In order to improve foreign trade and ensure a higher foreign exchange inflow, a consistent and stimulating agricultural policy is necessary (Tasić, 2018), as well as greater investment in the food sector. In that way, capacities would be provided for overcoming the existing and future challenges faced not only by the primary agricultural production but also by the food industry, as its logical continuation.

Methodology and Materials

As previously stated, this paper will analyze the structure of merchandise exports of the food industry of the Republic of Serbia, classified into five categories of agricultural products. Special attention is paid to processed and fresh food, in accordance with the methodology of the International Trade Center (ITC), which would help to obtain the valid results in calculating the comparative export advantage of this product category.

The classification of agricultural products, whose data are the subject of the research, was performed on the basis of defined categories and exceptions, previously conducted by Hufbauer and Chilas (1974), according to their technological nature (Table 1).

Table 1. Standard International Trade Classification

Category	Notes		Abbreviation
	Serial No.	Exception	
Raw material-intensive goods[8]	0, 2, 3, 4, 56	2 (26), 3 (35)	RIMG
Labour intensive goods[9]	26, 6, 8	6 (62, 67, 68), 8 (87, 88)	LIG
Capital-intensive goods[10]	1, 3, 53, 55, 62, 67, 68, 78	-	CIG

8 0 Food and Live Animals; 2 Crude Material, Inedible, Except Fuels (excluding 26); 3 Mineral Fuels, Lubricants and Related Materials (excluding 35); 4 Animal and Vegetable Oils, Fats and Waxes; 56 Fertilizers (other than those of group 272)

9 26 Textile Fibers (other than wool tops and other combed wool) and their wastes (not manufactured into yarn or fabric), 6 Manufactured Goods Classified by Material (excluding 62, 67, 68);8 Miscellaneous Manufactured Articles (excluding 88, 87)

10 1 Beverages and Tobacco; 35 Electric Current; 53 Dyeing, Tanning and Coloring Materials; 55 Essential Oils and Resinoids and Perfume Materials,. Toilet Polishing and Cleaning Preparations; 62 Rubber Manufactures, n.e.s.; 67 Iron and Steel; 68 Non-Ferrous Metals; 78 Road Vehicles (including Air-Cushion Vehicles)

Category	Notes		Abbreviation
	Serial No.	Exception	
Easy-to-imitate research-intensive goods[11]	51, 52, 54, 58, 59, 75, 76	-	EIRG
Difficult –to-imitate research-intensive goods[12]	57, 7, 87, 88	7 (75, 76, 78)	DIRG

Source: SITC / Revision 4, 2006

Benchmarking is a useful tool in the process of examining economic flows, which will be used to compare the relative costs of production and identify the sectors and markets that are most likely to succeed. The comparative analysis will be performed using the RCA index (Revealed Comparative Advantage). The RCA index will be used to determine the most important destinations and product groups for export trade in the region. In the international economy, it is used to calculate the relative advantage or disadvantage of a particular country in a particular class of goods or services.

RCA most commonly refers to the index introduced by Balassa (1965):

$$RCA = (E_{ij} / E_{it}) / (E_{nj} / E_{nt})$$

where E is export, i is the country index, n is the set of countries, j is the commodity index and t is the set of commodities; That is, the RCA is equal to the share of the country's exports belonging to the product class under consideration (Eij / Eit) divided by the share of world exports belonging to that class (E_{nj} / E_{nt}). A comparative advantage is discovered if RCA > 1. If RCA < 1, there is not discovered comparative advantage in goods or industry of a country (Granabetter, 2016).

$$RCA = \ln\left[\frac{Xi}{Mi}\right] \times \left[\frac{\sum_{i=1}^{n} Xi}{\sum_{i=1}^{n} Mi}\right] \times 100$$

In the above formula, X means the value of exports, and M means the value of imports. Index i denotes the pharmaceutical sector as a whole or its products. In case the state specializes in the production of pharmaceutical products and has a surplus in foreign trade, the RCA indicator has positive values and indicates a comparative advantage.

11 51 Organic Chemicals; 52 Inorganic Chemicals; 54 Medicinal and Pharmaceutical Products; 58 Plastics in Non-Primary Forms; 59 Chemical Materials and Products, n.e.s.; 75 Office Machines and Automatic Data-Processing Machines; 76 Telecommunications and Sound-Recording and Reproducing Apparatus and Equipment

12 57 Plastics in Primary Forms; 7 Machinery and Transport Equipment (excluding 75, 76, 78); 87 Professional, Scientific and Controlling Instruments and Apparatus, n.e.s.; 88 Photographic Apparatus, Equipment and Supplies and Optical Goods, n.e.s.; Watches and Clocks

The level of specialization in intra-industry exchange was analyzed and defined using the Grubel Lloyd index (GLI). Higher values of the GL index indicate domestic trade, and lower values of the index indicate that foreign trade is of an interindustrial nature. GLI is calculated according to the following (Grubel and Lloyd, 1975):

$$GL_i^t = ((\sum_{i-1}^{n}\left(X_i^t + M_i^t\right) - \sum_{i-1}^{n}\left|X_i^t - M_i^t\right|) / \sum_{i-1}^{n}\left(X_i^t + M_i^t\right)$$

where GL_i^t presents a interindustrial trade index of sector *i* in year *t,* while X_i^t presents goods export of group *i* in a year *t,* and finally M_i^t presents the goods import of product's group *i* in a year *t*.

The Lafay's index (LFI) was used with the aim of a detailed analysis of the values of the comparative advantage index. (Lafay, 1992):

$$LFI^i{}_j = 100\left(\frac{x^i{}_j - m^i{}_j}{x^i{}_j + m^i{}_j} - \frac{\sum_{j=1}^{N}\left(x^i{}_j - m^i{}_j\right)}{\sum_{j=1}^{N}\left(x^i{}_j + m^i{}_j\right)}\right)\frac{x^i{}_j + m^i{}_j}{\sum_{j=1}^{N}\left(x^i{}_j + m^i{}_j\right)}$$

if *x* are products' export values and *m* are products' import values.

This index is often used to define the general position of different industrial sectors. The creator of LFI believes that it compensates for the shortcomings of the Balassa index.

The macroeconomic environment of the Republic of Serbia has undergone significant changes in the period after 2010. Given that there is economic growth, but also attempts to privatize and restructure state and public administration, a number of reforms have been launched, fiscal and monetary, in order, among other things, to achieve adequate liberalization of foreign trade, and efficient use of resources that Serbia disposes.

It is estimated that the total economic activity in the Republic of Serbia in 2020, measured by the real movement of gross domestic product, recorded a decline of 1.1% compared to 2019. In 2020, agricultural production achieved a growth of physical volume of 4.4%, while industrial production, in the same period, recorded an increase in physical volume of 0.2%.

In 2018, the share of agriculture was 6% of total GDP, comparing to 1.5% of the Euro Area. In the surrounding countries, the share of agriculture is higher than in the EU: in Croatia 2.9%, Bosnia and Herzegovina 5.6%, Slovenia 2%, Hungary 3.3%, Romania 4% and Bulgaria 3.2%.

Table 2. Basic Indicators of Macroeconomic Trends in Serbia (2016 – 2020)

Indicators	2016	2017	2018	2019	2020
Total GDP (%)	3.3	2.1	4.5	4.2	-1.0
GDP per capita ($)	5,756	6,308	7,245	7,410	7,657
Foreign trade (mil. $)	-4,016	-4,923	-6,644	-7,098	-6,735
GDP of agriculture (bill. $)	2,8	2,7	3,2	3,1	-
Agriculture % in total GDP	6.8	6.0	6.3	6.0	-
Food industry % in total GDP	25.9	24.4	24.4	-	-
Foreign direct investments (bill. $)	2,4	2,9	4,1	4,3	3,5
Unemployment rate (%)	15.9	14.1	13.3	10.9	9.0
Inflation rate (%)	1.1	3.1	1.9	1.9	1.6

Source: Statistical Office of the Republic of Serbia; World Bank Data

In Serbia, the real growth rate in the agricultural sector was -11.4% in 2017, 15.1% in 2018 and -1.6% in 2019 regarding a food production index (2004-2006=100), Romania is a country that recorded the best values among southeast European countries (125.52), according to the World Bank Data in 2019. Other countries of the region had similar but worse results: Serbia (105.97), Croatia (104.66), Bulgaria (103.74), Slovenia (102.88), Hungary (101.61).

Resources intended for rural development, as well as scientific-technological development, are emerging as key solutions to sustainable economic development, while also further subsidizing factors that are not seemingly crucial, such as improving rural infrastructure or improving rural farms. Taking into account that in the overall result of foreign trade, Serbia has a constant deficit, over the years, it should be noted that trade in agricultural and food products is among the few categories in which it has a surplus. In 2019, growth was achieved in the amount of 361 million USD, in the category of food products, beverages and tobacco. In the period from 2016 to 2020, the average value of exports of this type of product was 1,424.6 million USD. Positive results were recorded as a consequence of the successful foreign trade to European Union market, and to the countries of the region, as well as a favorable trade position with the EFTA countries.

Effective reforms in the field of a country's national economy provide a certain kind of stability and a good starting point for increasing the living standards of the people living in it. Similarly, as in all other economic activities, modernization and application of innovations is necessary in the agro-economy sector. There are a number of indicators that do not positively affect the competitiveness of products intended for export. Among them are outdated technical equipment, inefficient use of available resources in agricultural production, but lack of raw materials in the production process, so the logical solution is efficient modernization and flexibility in the requirements of the foreign market.

The analysis established a decrease in production in the manufacturing industry by 2.6% in the observed period. The increase in the volume of production is present in the categories of clothing and footwear and raw materials, ie the decrease in the categories of motor vehicles and fuels.

Table 3. Basic Indices of Industrial Production, by Activity (Index, 2015 = 100)

Indicators	2016	2017	2018	2019	2020
Total Industrial Production	105.2	109.3	110.7	111.0	111.5
Manufacture of Food Products	105.6	105.3	103.1	98.8	101.3

Source: Statistical Office of the Republic of Serbia

In order to effectively achieve the desired level of competitiveness in the international market, it is necessary to apply modern engineering, with adequate experience and knowledge in the field of technology use.

Table 4. Exports and imports, by SITC commodity groups, rev.4 ($ mil.)

Indicators		2016	2017	2018	2019	2020
Export	Food and Live Animals	2,267	2,292	2,422	2,584	2,944
	Beverages and Tobacco	550	496	539	583	690
Import	Food and Live Animals	1,091	1,270	1,469	1,546	1,763
	Beverages and Tobacco	308	315	345	382	365

Source: Statistical Office of the Republic of Serbia

Looking at the presented data, we can see the surplus that the Republic of Serbia realizes in foreign trade in primary products. The increased volume of trade, as well as the mentioned liberalization of trade relations with the countries in the region and Europe, have influenced the achievement of a higher level of comparative advantage, and thus competitiveness on the international market.

Table 5. Exports and imports, by products SITC ($ mil.)

Indicators		2016	2017	2018	2019	2020
Export	RIMG	3,280	3,518	3,854	4,019	4,403
	LIG	3,267	3,801	4,217	4,398	4,216
	CIG	20,601	24,014	27,693	28,057	10,024
	EIRG	13,318	16,056	18,627	19,079	8,338
	DIRG	8,189	10,422	12,279	12,553	6,207
Import	RIMG	3,763	4,772	5,654	5,862	4,868
	LIG	3,415	3,886	4,437	4,582	4,732
	CIG	28,411	33,093	38,853	39,935	12,225
	EIRG	16,933	19,370	22,809	23,724	10,789
	DIRG	9,985	11,764	19,925	14,757	5,810

Source: Statistical Office of the Republic of Serbia

Judging by the results, CIG, EIRG and DIRG products account for over 75% of total exports, while RIMG and LIG products account for 25%, although even a small share of total exports tends to increase in the observed period.

The essence of agricultural production is to increase the volume of production in order to achieve market competitiveness. The increase in the volume of production can be realized through modern knowledge, but also through the influence of foreign capital. If we look at productivity from the ecological aspect, according to its level of production

capacities, ie the yield that is realized per one production unit, then it should be pointed out that the great importance of the organization of production, with the mentioned application of technological innovations, is constant investment in gaining experience and knowledge.

Results and Discussions

In this research, the comparative advantage of food products exports in the observed period from 2016 to 2020 was measured. This comparative analysis of manufacturing industry exports established a negative value of the RCA index, while positive values are recorded by products within the food sector. The production of food, beverages and tobacco, but also the production of rubber and plastic products represents a potential that should be used to improve the position on the international market.

On the other hand, the analysis of the RCA index tells us that in 2018 (0.46). year, the level of comparative advantage of the observed product category was higher compared to 2016 (0.13). Obviously, the highest value of the index is recorded in the category of production of food, beverages and cigars, within the processing industry, which significantly affects the realization of the surplus in foreign trade. Consequently, the level of competitiveness of the food industry on the international market has increased. However, in this period, certain oscillations in the values of the observed parameters are also noticeable. This may be a consequence of the change in the volume of trade in goods, but also definitely a consequence of the Covid-19 pandemic in 2020. Deficiencies and imperfections of the system and organization of production in individual segments influenced the emergence of poor results of the entire agro-industry.

Table 6. RCA, LFI and GLI values

RCA	**2016**	**2017**	**2018**	**2019**	**2020**
Processing industry	-0,29	-0,27	-0,19	-0,26	-0,17
Food products and beverage	0,24	0,31	0,48	0,62	0,46
LAF	**2016**	**2017**	**2018**	**2019**	**2020**
Processing industry	5,94	6,08	12,10	0,29	11,43
Food products and beverage	5,14	4,90	5,43	4,90	5,74
GL	**2016**	**2017**	**2018**	**2019**	**2020**
Processing industry	0,67	0,73	0,79	0,82	0,84
Food products and beverage	0,73	0,69	0,52	0,57	0,58

Source: Authors' Calculation

The LFI indicates an increase in the comparative advantage, but also an increase in the volume of exports of the food production in 2019. Moreover, using the GLI we can observe a correlation between the comparative advantages of the particular product category in the industry. It should be noted here that changes in the structure of trade affected the specificity of foreign trade in 2016, in contrast to which in 2020 a significant shift was achieved in the production process.

The prices of export products influenced the improvement of the comparative advantages of the exports of the Republic of Serbia. Favorable price competitiveness, together with increased production volumes, contributed to the improvement of the comparative advantage. Products such as wheat flour, but also other mill products have an extremely high value of the RCA index. As a consequence of the reduction of livestock, ie the constant reduction of investments in animal husbandry, the Republic of Serbia has lost its significance over time when it comes to the international trade in raw pork and beef. However, to some extent, the lack of production of animal raw materials has been replaced by increased production of plant products. Thus, for example, beer and confectionery products increased the value of the RCA index. Similarly, fishing is an aspect of production that is insufficiently represented in the agro-industry of the Republic of Serbia, and which abounds in potential, starting from ecologically favorable environmental conditions and unpolluted running and standing waters, where it is possible to grow fish stock for export.

Table 7. The Empirical Results

Indicator	RCA		LAF		GL	
	2016	**2019**	**2016**	**2019**	**2016**	**2019**
RIMG	-0,33	-0,36	1,16	-0,60	0,54	0,67
LIG	-0,29	-0,20	1,72	2,50	0,58	0,81
CIG	-0,25	-0,22	3,01	2,04	0,63	0,79
EIRG	-0,58	-0,73	-2,48	-3,33	0,29	0.41
DIRG	-0,55	-0,42	-3,51	-1,25	0,31	0,62

Source: Authors' Calculation

It is possible to single out some of the most important interpretations of the results obtained in the conducted research, which can be systematized according to the following:

- The research resulted in a negative RCA index in categories of RIMG, LIG, CIG, EIRG, and DRIG;
- During the observed time period, the value of the RCA index in foreign trade for the product categories EIRG and RIMG was depreciated. Although this negative trend appears in other categories, the Republic of Serbia has a solid position in relation to other sectors of production;
- Although there is an increase in the volume of merchandise exports in all the mentioned product categories, compared to competitors in the region, the position of the Republic of Serbia is still not at the desired level. Considering that the best positioned product categories are EIRG and DRIG, here is also the greatest space for further development and progress;
- Table 6 intentionally presents the data concluding with 2019, in order for the empirical results to be credible, taking into account the Covid-19 pandemic, which negatively affected all parameters, in 2020 and ongoing.

Table 8. RCA index of products export

Sectors	RCA in 2016	RCA in 2020	ΔRCA
Fresh Food	-0.14	0.00	0.14
Processed Food	0.16	0.28	0.12

Source: Authors' Calculation

Differentiation of products and production processes in the observed sectors creates a certain level of demand for these products in the regional, European and world markets. The main indicator and fact according to which domestic production should be directed is that products with a positive RCA index create a positive foreign trade balance.

Conclusions

Research of this kind indicates the existence of the interrelation of the mentioned indices with economic growth and development, but also a very important correlation of inadequate organization and lag behind the developed countries of the European Union. Low agricultural yields are a consequence of the action of many factors, such as low investments, not only in the form of cash inflows, but also the inflow of knowledge, technology and their implementation into the existing production system. The basic values of production, purchase and processing on domestic farms are devalued, and insufficiently high agricultural subsidies discourage producers from finding their perspective in this sector. As previously mentioned, this is a type of problem at the microeconomic level of the Republic of Serbia, however, at the same time acting on the environment in which we live and create, allows further development of the problem, and creating a disadvantaged macroeconomic position at the international level.

The supply of food products of the agro-industry is variable, and for search engines, with a large number of consumers, it is often insufficient. Most products do not have quality certificates, so the production procedure cannot be considered competent, nor can its products. It would be said that small investments in international marketing lead to uncertain placement in foreign markets, and in such a business environment it is difficult to increase competitiveness.

At the strategic level, the adjustment of the export structure to the needs on the import side should be carried out. Also, it is necessary to create an adequate agro-economic policy, with realistically considered possibilities and opportunities on the one hand, but weaknesses and market as well as trade risks on the other hand. Larger budget allocations are needed for the agricultural sector, but the implementation of incentive policies that would keep the population in the countryside and motivate them to continue with agricultural production. Above all, it is necessary to improve the quality of products, as well as harmonize quality with prescribed international standards, in order for products to be competitive and recognizable in the region and beyond.

Conflict of interests

The authors declare no conflict of interest.

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STRATEGIC ADVANTAGES AND DISADVANTAGES FOR RURAL TOURISM DEVELOPMENT IN DINARIC ALPS / CASE TROPOLJE

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ABSTRACT

The improvement of life quality in rural areas is an overall goal of all development strategies in the Western Balkans countries. Rural tourism represents the quality option for diversification of income and employment opportunities in Tropolje region (Canton 10 in Bosnia and Herzegovina). Therefore, the goal of this study is to identify strategic advantages and disadvantages for tourism development in Tropolje region of Dinaric Alps and provide guidelines for its development. The SWOT analysis combined with AHP method was used. In seven domains, 29 strengths, 31 weakness, 25 opportunities and 24 threats were determined, with total intensity 154, 202, 140 and 144 and average rating of influence intensity 5.3, 6.5, 5.6, 5.8, respectively. A significant advantage for tourism development were linked to short supply chains based on natural and cultural heritage of the region.

Introduction

Around the globe, rural areas face similar problems - depopulation, poverty and the economy based largely on agriculture (Wookhyun & Alarcón 2020). Their development strategies recognize tourism as the promising economic activity (Radović et al., 2018), able to diversify incomes and valorize natural and created values these territories

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abound in (Mikulec & Antouskova, 2011; Podovac et al., 2018). Each of them has aligned more or less tourism development plans with their specific characteristics, which is the basic prerequisite for success (Ibanescu et al., 2018; Roman et al., 2020; Gajić et al., 2020). For economically underdeveloped areas, designing strategies for tourism sustainable development could appear exceptionally complicated (Bjeljac & Brankov 2009; Radović et al., 2020).

Rural tourism is supported in all EU countries due to its socio-cultural, economic, spatial and environmental functions (Aytuğ & Mikaeili 2017).The improvement of quality of life in rural areas is declared as the overall goal of all development strategies in the Western Balkans countries (Petrović et al., 2018, Krasavac et al., 2018). Rural economy development is the proclaimed priority for reaching this goal. Being largely funded in primary industries, its rural economy is far from being a socially, economically, and environmentally sustainable, so its diversification is an obvious goal. This means that its simple, farming and forestry based rural economies should be replaced by more complex, or at least more efficient/profitable one, while primary and further secondary industries should get better valorization (Chen et al., 2019). Diversification should create employment opportunities in services valorizing local natural and cultural resources, while providing better life to those dealing with the primary and secondary productions (Dašić et al., 2020). Tourism has been identified as one of its key sectors, to drive sustainable diversification of the rural economy in Balkans (Cvijanović et al., 2018). The one should provide a hub for existing local food and innovative services supply chains (Đorđević-Milošević & Hyvaerinen, 2020). Strengthening and greening of food supply chains and territory related activities in rural space are must, and is a first step towards establishing firm rural tourism (Cvijanović & Mihailović 2016).

Targeted wider area of Tropolje, with its specific Dinaric Alps karst backbone, is an exceptional challenge when it comes to further rural economy development. This territory, according to the research of, seems to be suitable for rural tourism development. Tourism attractors identified by Đorđevic & Hyvaerinen, (2020) proofed good prospective for rural tourism but its value chain is weak and full of gaps. However, being laggard in tourism development while rooted in the extreme fragile environment and socio-economically lapsed rural communities, Tropolje rural space requires more complex, layered assessment of its potentials to get quality development strategy. Rural tourism is recognized as a powerful tool for adding value to food products, while in opposite direction supply with attractive foods increases its attractiveness, so we should know more about the products of local agriculture, forest non-wood, as much as artisan food to adjust suitable interactions (Mandarić et al., 2017). The goal of this research is to identify strategic advantages and disadvantages for tourism development in Tropolje and provide guidelines for its holistic planning.

Materials and methods

This study explores in detail both internal and external factors of rural tourism development. It's based on a review of secondary data (statistics, reports, development

strategies and LRDPs – Local Rural Development Plans, and other literature) and primary data collected through field work, workshops, consultations with stakeholders and interviews with local farmers and other interested parties) in wider Tropolje historical Region of Mid Dinaric Alps belonging (overlapping) to Canton 10 of Bosnia and Hercegovina. Regional specific feature are big karst fields.

The data collected were analyzed by Delphy method (Konu, 2015) and SWOT analysis integrated with AHP method (A'WOT) AHP method was applied to obtain numerical determinants of the examined characters that indicate the intensity of the influence of factors, determined by the SWOT analysis matrix. This method was often used to develop strategies for tourism. Examples for rural tourism also exist (Fabac et al., 2011; Duglio et al., 2019; Ilić et al 2020). This method was selected as a suitable tool for multi-criterion decision making. Numerical values for factors were provided to weight their importance or likelihood of their occurrence. The weightings for strengths and weaknesses (the internal factors) are calculated by assigning a value for importance and for internal rating (Kisi, 2019). The weightings for opportunities and threats (the external factors) are calculated by assigning a value for importance and likelihood. Pair wise comparison of criteria was completed after implementing numeric expression for each of them. The expanded Saaty's scale of relative importance was used (1-10 instead of 1-9; since 1-10 scale/decimal system is more applicable for working with locals) while definitions in the scale intensities are equivalent. Further the TOWS matrix (Weihrich, 1982) was applied to identify four alternative strategy groups: Strength-Opportunity (SO or Maxi-Maxi), Strength-Threats (ST or Maxi-Mini), Weaknesses-Opportunities (WO of Mini-Maxi), and Weaknesses-Threats (WT or Mini-Mini).

Results and Discussions

Research area: The total explored area is approximately 4,934 square kilometers - a tenth of the surface of Bosnia and Herzegovina which include six municipalities: Bosansko Grahovo, Drvar, Glamoč, Kupres, Livno and Tomislavgrad. Following data on the population density (*Table 1*.), all six municipalities are classified as rural.

Table 1. Population density by the Canton 10 (2015)

Municipality	Area km^{-2}	Population	Population density per capita/ km^{-1}
Bosansko Grahovo	780.0	1,950	3
Drvar	589.3	10,409	18
Glamoč	1,033.6	4,355	4
Kupres	569.8	3,243	6
Livno	994.0	31,422	32
Tomislavgrad	967.4	26,378	27
Canton 10	4,934.1	77,757	16

Source: FBiH Statistics Office: Bosnia & Herzegovina in Figures - Canton 10.

According to the analysis of the total population movement in the Canton 10 from 2007

to 2015, there was a marked negative trend and depopulation in this area. Almost 80% of the total population of this territory lives in only two municipalities - Livno and Tomislavgrad, meaning that the rest of the territory is almost empty.

Agricultural resources in the function of tourism development: Apart from urban centers, the rural economy is still dependent of primary sector with considerable contribution of subsistence farming. Agriculture sector accounts for 9-10% of the total employment, while primary sector employ more than a half inhabitants (FB&H Statistics Office 2020).

Due to favorable geographical characteristics, climate conditions and natural resources, livestock production and production of forages, some small grains and potato are relatively competitive economic branches. In the Canton 10, 55,050 ha of arable land are available (14.706 ha are farmed, cultivating grains on 10.443 ha, vegetables on 1.160 ha and forage on 5.723 ha and industrial plants on 202 ha). The most important type of vegetable production is the production of potatoes on 83.43% (2016). Of the fruit plantations, plums are dominant and less so pear and nuts. The area of Drvar is known for production of dogwood berry (cornelian cherry) and associated products. In the Canton 10, there are 97 medicinal and aromatic plant species of economic importance. Collection of wild herbs and forest fruits is a traditional additional source of income for the local population.

In livestock production most represented are cattle and sheep production, while goat, pig, while horse breeding and poultry growing are less represented. Beekeeping is also well developed. The Canton 10, with the dominant share of natural grass areas, natural meadows, and pastures, has prerequisites for cattle breeding and meat production. Milk production is traditionally the key cattle product. The total cow milk production shows a trend of growth and from 27.12 10^6 l in 2008, it increased by 10 10^6 l in 2016 and amounted to 37.54 10^6 l. In 2015, the value of cow's milk production amounted to slightly more than 12 million USD and accounted for almost one third of the total agricultural gross output (FB&H Statistics Office 2020).

Traditional dairy products, especially cheeses, are important attractor of the Tropolje. These are produced in a traditional manner, from raw milk on small family farms. Although represented by a small share in the total milk processing, this production has a wider significance, especially in terms of the development of rural areas. The use of sheep and goat milk is especially important, as it is underused in the industry. This authentic production is under threat because of introduction of high food safety standards which prevent producers to use original recipe for making cheese of row milk, which means their product should be produced in a same way as an industrial one and being in that case less competitive and of lower quality, small artisan producers are losing ground. So far, they can sell their products just on farm hopping that some other short value chain can be developed through increasing local consumption (agrotourism).

The dairy industry cooperates with about 1.500 farms. The production programs of the two most important dairies (Livno Dairy - purchases about 12 10^6 l of milk and Ekosir

Puđa Livno - purchases about 3 10^6 l of milk annually and produces about 300 t of cheese) contain primarily high-processing products, that is, the main revenues realized by selling hard and semi-hard cheeses. Thanks to the established quality and safety systems, both dairies have access to the EU market, and above all to the market in Croatia.

SWOT analysis of the rural tourism business environment was applied at 7 domains (*Table 2*).

Table 2. Summary of the SWOT analysis for seven domains

Elements in the STRENGTH set	Elements in the WEAKNESSES set
5 of infrastructure and traffic	5 of infrastructure and traffic
3 of human resources and labour market	4 of human resources and labour market
5 of relations and networking with other commercial and public entities	5 of relations and networking with other commercial and public entities
3 of tourist marketing systems	5 of tourist marketing systems
3 of organization, management and	3 of organization, management
3 Support to tourism development	3 Support to tourism development
7 of tourism products	6 of tourism products
TOTAL STRENGTH: 29	TOTAL WEAKNESSES: 31
Elements in the OPPORTUNITIES set	Elements in the THREATS set
4 of infrastructure and traffic	3 of infrastructure and traffic
3 of human resources and labour market	3 of human resources and labour market
4 of relations and networking with other commercial and public entities	8 of relations and networking with other commercial and public entities
5 of tourist marketing systems	3 of tourist marketing systems
3 of organization, management	2 of organization, management
2 Support to tourism development	2 Support to tourism development
4 of tourism products	3 of tourism products
TOTAL OPPORTUNITIES: 25	TOTAL THREATS: 24

Source: Developed by the authors

In the domain "*Traffic and infrastructure*" main strengths were strategic geo-traffic position of Tropolje in the hinterland of the Adriatic coast vicinity of European road corridors (A1 "*Dalmatina*", X and V); and solid telecommunications & informatic infrastructure. Main weaknesses were lack of modern road infrastructure; incomplete waste management system; lack of destination management organization and receptive agencies. Opportunities included interest of the government & international community for the highway construction to connect Pannonian lowland with the Adriatic coast; interest of international capital for infrastructural investments; interest of «low-cost» air companies for flights to Mostar and existance of relatively large number of small sport airports and appropriate sites for them. Assessed threats were lack of domestic resources for financing infrastructure; reduced long-term, loyalty of guests because of risks in traffic, mines and war ruins and loss of potential market due to lagging the competition.

In the domain "*Human resources and labor market*" a strength is presence of quality staff, trained in the country and abroad; natural talent for service activities and secondary schools with all necessary profiles were pronounced. Quality professionals

not always employed in their sector of competence; undeveloped partnerships in the whole; lack of qualified hotels and tourist managers and lack of professional staff in new tourism positions were recognized as weaknesses. From external factors, availability of European funds, special for cross-border cooperation with Croatia, oriented into development of human resources, partnership etc.; application of European solutions and law regulations about labor and employment and quality and talented individuals and civil society organizations (CSOs) were recognized as main Opportunities. Main threats include permanent migration of manpower from the region; depopulation of rural settlements and „*brain-drain*".

Assessment of the domain "*Relations & networking with other commercial & public entities*" pointed following strengths: availability of quality local products and artisan food; well-known cultural and traditional events; initiatives of cantonal administration in support to local food producers; capacity and initiatives in public enterprises (especially "HBŽ forests") and quality cantonal mountain rescue service. Weaknesses were: poor connection of the service providers with the local food producers; development of "agritourism"; insufficient cooperation; non-organized protection of heritage and poor inclusion into tourism offer. Opportunities were interest of rural households for developing tourism; CSOs have a capacity to fill gaps in supporting tourist activities; and better use of various market niches. Threats were absence of integrated, well-promoted tourist offer; slow development of complementary activities; insufficient investment in capacity building; premature introduction of higher food standards; impossibility of final solution of mines contamination and uncertainty about functioning of tourist communities and legal solutions that do not guarantee the efficient organization of tourism destination management.

In the domain "*Tourism Marketing System*", determined quality local initiatives of some entrepreneurs; good initial coverage promoting cultural and natural heritage, sports and adventure activities etc. which have importance for developing rural tourism and solid media coverage of rural events are identified as strengths. Weaknesses were poor coverage by the system of local tourist organizations & reception agencies promoting destination; insufficient support to CSO sector heritage conservation; lack of support to networking the quality persons; auricularis and absence of continuous support to local initiatives for creation of good cantonal tourist image and bad positioning of the tourist destination of Tropolje in promotion at national level. Main opportunities were growth of world tourists interests for destinations in nature and destination good for active holiday; easy access to quality marketing tools and technology; using lessons learned; interest of international community and funds for capacity building projects in tourism marketing and UNESCO world list inscription of local cultural heritage. Accelerated tourism development and innovations in the surroundings; diversified global offer of tourist products and possible political tensions and purchasing power weakening of customers were recognized as threats.

Assessment of the domain "*Organization and management*" showed the following strengths: awareness that tourism require wide partnerships to be properly organized

and managed; experience in tourism sector (Kupres primarily) and presence of few entrepreneurs running successfully own businesses in rural tourism. There are weaknesses: no institution for implementation of development activities & tourism destination management; lack of concrete coordinated actions on the cantonal level and poor intersectoral cooperation for running joint actions for rural tourism development. Determined opportunities are quality pool of stakeholders in different fields and activities and ongoing European integration, while threats are further extension of the period without functional law on tourism and random organization of partnerships between certain municipalities, without having one to cover whole territory in Tropolje.

In the domain "*Support to the tourism development*", main strengths were enhanced interest of the cantonal government and local administrations for tourism development; interest of all stakeholders for establishing public-private partnerships for tourism development and strengthening civil and government sector capacities for guiding the development processes. Weaknesses were determined as: low investment potential for improving general infrastructure; non-existence of serious and steady financial support and programs for tourism development in Tropolje; and financially weak civil sector surviving on enthusiasm. Opportunities were financial support through IPA, Cross-Border Cooperation (CBC) and IPARD. Threats are marginalization of tourism development support due to political tensions at all levels as well as in surroundings, and lack of financing for investment in tourism and tourism management, marketing, and promotion.

Assessment of the domain "*Position of the tourist production*" determined the following strengths: people are hospitable and opened; well-known rural events with the long tradition; the rich nature of karstic areas; valuable cultural historic heritage; attractivity of local gastronomy; part of Dinaric arch and its mountain trails and active religious centers with rich programs. Insufficient protection and maintenance of main natural and cultural resources and attractions; lack of accommodation capacities on farms, newly created tourist attractions, services at the attractive locations, professionally designed tourist products and incomplete short tourist value chains was determined as weaknesses. There are opportunities such as: positive change of costumers toward tourism offer; usual positive reaction of the world market to the new destinations; diversification of tourism offer because of technological and changes in lifestyle; strengthening the megatrends (adventurism, ecotourism, rural and wellness tourism) and threats: devastation of swamps, risk of losing of some other spaces for tourism development; accelerated activities of competitors on the development of tourist products and absence of interests of investors.

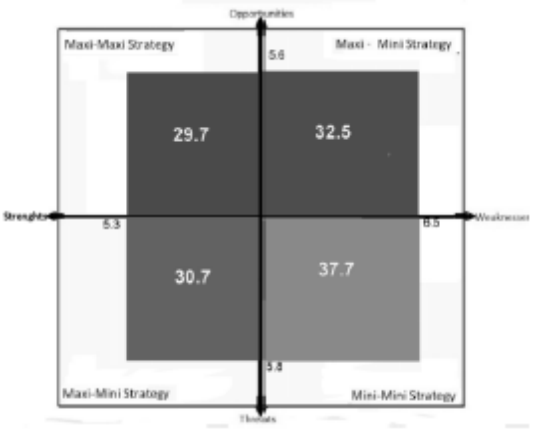
Numerical determinants of the examined characters that indicate the intensity of the influence of factors, obtained through AHP method are shown in *Table 3*.

Table 3. Intensity of sthrenghts, weaknessess, opportunities and threats. 1 = the best rating, 10 = the worst rating

Domain	S	W	O	T
Human resources and labour market	38	44	26	19
Relations & networking with other commercial & public entities	27	28	15	30
Tourist marketing systems	22	45	40	26
Organization and management	10	14	12	10
Support to tourism development	9	11	11	10
Tourism product	48	60	36	24
Number of elements	29	31	25	25
Total intensity	154	202	140	144
Average rating of intensity of influence	5,3	6.5	5.6	5.8

Source: Developed by the authors

Despite to differences in particular items, the average rating of intensity of influence were close (5.3 – 5.8) except for weaknesses (6.5) and indicate that weaknesses have worst rating, as in all domains too (*Table 3*.). Identified alternative strategy groups are presented in the TOWS matrix *Figure 1*.



The obtained results are in line with other investigators, reporting advantages for sustainable tourism development in rural areas of Serbia (Terzić et al., 2020; Đorđević et al 2019) in Europe (Tanasa, 2014; Argyropoulou, 2019; Prinar et al., 2019) and worldwide (Anderson, 2018; Yamagishi et al., 2021; Jeyacheya & Hampton 2020). Figure 1. SWOT polygon strategy analysis

Some common limitations for development of rural tourism (low developed infrastructure due to low financing resources, absence well-promoted tourist offer, depopulation of rural areas, insufficient political support) were reported (Bošković et al., 2013; Gavrilă-Paven et al., 2015; Castellano-Álvarez et al., 2019; Polukhina et al. 2021).

Although there are several strategic documents related to agriculture and / or tourism (Strategic Plan for Rural Development of B&H, 2018; Mid-term Strategy of Agricultural Sector Development in the FB&H for the period 2015 – 2019, The FB&H Rural Development Program 2018-2021; Tourism Strategy for FB&H 2011-2020), the solutions offered are not always completely in line with the situation on the field, so it is necessary to consider the results of this research when improving strategic documents. A lesson learned on the development of Istrian gastronomic offer in agritourism based on old livestock (Pivčević & Lesić, 2020) could be applied in the Tropolje. The starting positions of this example are very similar, except for the state border between and the territory from which tourists should come (CRO-BIH).

Conclusions

Geographical position and the nature of Tropolje is unambiguously strategic advantage for its tourism development (hinterland of the Adriatic coast in the middle of the internationally recognized Via Dinarica mountain trail). Multilayer cultural coating of its fabulous karst nature, starting with the abundant tangible witnesses of the history to live traditions – authentic mountain gastronomy and artisan food, events and rural livelihoods, represent huge resource for it. Region is rapidly depopulated, while majority of inhabitants live in only two urban settlements, yet presence of the exceptionally talented and well trained HORECA workforce, along with the proactive CSO sector is making rural tourism development feasible. Heavily dependent on primary sector, rural economy provides lots of space for diversification. The most appropriate seems to be introduction of agro/rural tourism which is able to combine identified strategic advantages over strengthening short local supply of food and services.

Some institutional shortages, such as lack of destination management organization and receptive agencies are feeding-up the poor tourist offers status-quo, but improved inter-sectoral cooperation, capacity building for missing tourism managers and support to public-private partnerships can help prevailing it, especially if consistent support for heritage conservation and the attached tourism is provided to valuable local CSOs capable of increasing diversity and quality of tourist products and their promotion. Weak local short supply chains, along with the problem with food safety standards will continue representing serious disadvantage for tourism development if financial and technical support remains unavailable to operators along the tourism value chain. Shortage of capital still hinders also investments in modern infrastructure, however availability of funds from international sources is promising.

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Conflict of interests

The authors declare no conflict of interest.

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THE IMPORTANCE OF ESTABLISHMENT AND DEVELOPMENT OF TOURISTIC COOPERATIVES IN THE ECONOMY OF RURAL AREAS OF SERBIA

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ABSTRACT

Rural tourism in Serbia and its development has positive effects on all aspects of rural development, both economic and social. The aim of this paperwork is to investigate the importance that touristic cooperatives in rural areas of Serbia, although relatively new in this area, have and can have on the overall development of rural areas. For the purpose of the research, an interview was conducted with the directors of the existing tourist cooperatives in Serbia. Based on the obtained data, it was determined that this form of cooperative association is necessary, not only because of the development of tourism in the countryside, but above all because of the survival of the Serbian village. The obtained data on the problems and limiting factors that cooperative members face in business can be a further basis for future research on the topic of rural development through the establishment and strengthening of tourist cooperatives.

Introduction

Tourism has proven to be a tool for economic diversification and a major employment engine with a multiplier effect on other sectors that contribute to rural development. Tourism in rural areas can particularly benefit traditionally disadvantaged groups such as women - who make up 54% of the workforce in the tourism sector compared to

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39% for the whole economy - youth and indigenous people. Tourism is also an easy access sector for micro and small enterprises and for the self-employed, who make up a significant part of the tourism sector and community level entrepreneurship in general.

Rural areas face increasing demographic challenges, particularly depopulation, lower income levels, a digital divide, decline in traditional economic activities and lack of economic diversity as well as scarce infrastructure, services and transport connectivity. Rural youth are one of the most vulnerable groups due to the lack of gainful employment and entrepreneurial opportunities in agriculture and related rural economic activities (UNWTO, 2020). Rural tourism attracts new residents, tourists, and entrepreneurs, and, thus, it is considered to be the instrument of revitalization and development of the life and work in rural areas (Findlay, Short, & Stockdale, 2000). Any form of tourism that showcases the rural life, art, culture and heritage at rural locations, thereby benefiting the local community economically and socially as well as enabling interaction between the tourists and the locals for a more enriching tourism experience can be termed as rural tourism. Rural tourism is essentially an activity which takes place in the countryside. It is multi-faceted and may entail farm/agricultural tourism, cultural tourism, nature tourism, adventure tourism, and eco-tourism. As against conventional tourism, rural tourism has certain typical characteristics like; it is an experience oriented, the locations are sparsely populated, it is predominantly in the natural environment, it meshes with seasonality and local events and is based on preservation of culture, heritage and traditions. Rural tourism has many potential benefits for rural areas (Frederick, 1992).

Rural tourism can be an important source of jobs for local communities. Tourism can be an important force for developing disadvantaged rural areas. In particular, rural communities with few other options for development may perceive that tourism represents a panacea for growth (Aref et al. 2009; Grbić & Jovanović 2020). Cooperatives are a common organizational form in several large economic, trade and service sectors (Agroinfo, 2020).

Community cooperatives illustrate the primmary benefit of community-driven enterprises; they offer creative solutions to community development issues while maintaining some level of community ownership and control. The activities of cooperatives in rural areas are generally for improving and developing the agricultural sector. At the same time, cooperatives have a flexible structure for dealing with public concern and adapting to changing conditions (Inan, Hurma, 2016) With the development of various forms of modern cooperatives in almost all areas of activity, the cooperative movement in the countries of developed market economies during the 20th century managed to impose itself as a significant autonomous force of the so-called "third sector" in solving some global problems, as well as in achieving more social justice.

The aim of this paper is to examine the potential impact and importance that tourism cooperatives in rural areas in Serbia could have, both on the development of tourism in these areas and on the entire rural economy, as well as to gain a better insight into stimulating and limiting factors that affect their work and future development, in order to eliminate these negative development factors in the future.

Theoretical background

According to Njegovan (2016), in the simplest terms, rural tourism can be defined as tourism that takes place in the village. Rural tourism includes relaxation in the rural environment, communication with the hosts, consuming healthy local food, as well as getting acquainted with agricultural activities (Štetić, 2009). Serbia has very favorable conditions for the development of this type of tourism, primarily due to the preserved nature, mild climate, clean air, unpolluted rivers and lakes, as well as rich flora and fauna. The development of this type of tourism greatly contributes to the overall well-being of the country, as it enables economic activity to the rural population, which in recent decades has massively migrated to cities, leading to rural extinction, declining domestic agricultural products, urban population growth and thus higher unemployment, as well as numerous other consequences.

Rural tourism in many countries, especially in developing countries, is a mean (Ashley, 2000):

- To achieve macroeconomic growth, especially as a means of generating income from abroad;

- To achieve competitiveness and return on investment of both public and private sectors (tourism is a commercial activity in which business activities are aimed at product development for profit);

- To encourage the conservation process (many conservators see tourism as a form of sustainable use of resources - natural and cultural); and

- For the socio-economic development of the rural population, and as such represents an important component of rural development.

In addition to general, the development of tourism in rural areas can produce a number of positive economic and non-economic effects for agritourism farms themselves. The farms employ a larger number of household members, sell home-made products (embroidery, knitting, folk costumes, handicrafts, etc.), nurture traditions and preserve customs and old forgotten crafts, create opportunities for the return of the population to rural areas and more (Boskovic, 2012).

The accommodation and food sector is closely linked to the development of the tourism economy and makes a considerable contribution to economic growth, employment, enterprise demography and to development in rural, peripheral or less developed areas. Measuring the value of accommodation and food service activities, both in current and constant prices, is therefore particularly important for countries with significant tourism activity. The sector also serves local clients and business customers. (OECD, 2014)

The key products of rural tourism include:

• Agritourism and rural tourism - developed in western and eastern Serbia (Vujko, 2017);

• Ethno-rural tourism, i.e. characteristics of the rural area (culture, history);

• Eco-rural tourism - developed in Western European countries, refers to the protection of natural resources (Vidović, 2018),

• Combined forms of rural tourism - refer to events, manifestations, recreation and outdoor recreation.

The cooperative sector has been identified by many international organizations, such as the United Nations (UN), the International Labour Organization (ILO), the Food and Agriculture Organization of the UN (FAO) and others, as a suitable sector for stimulating national income growth, employment growth, fuller use of production capacities, as well as poverty reduction. (Victoria logistic, 2020)

Cooperatives in the most developed European countries have a tradition of over 150 years (Zakić, 2018). The primary goal of every cooperative is to meet the needs of its members. They can be an ideal model for uniting different entities in tourism, and some of their advantages for the development of rural tourism would be the following:

- They enable the association and joint action of various entities, for example, individuals such as private landlords and crafts in the field of catering and tourism, with legal entities engaged in tourism services.

- Within the cooperative, each member retains the autonomy of its activities, and has equal voting rights, regardless of the amount invested.

- The cooperative can create an integral and sustainable tourist product composed of elements for which the members of the cooperative are responsible.

- Association in a cooperative gives the possibility of more efficient investment in marketing, because the entire cooperative is promoted, and not each of its members separately.

- Community care as one of the characteristics of cooperatives has a special significance for rural areas and social sustainability (socially beneficial action) (Đurkin Badurina J, 2018; Milojević et al., 2020).

According to the Law on Cooperatives in the Republic of Serbia, a cooperative is a legal entity, which is a special form of organizing individuals who operate their economic, social, cultural and other interests by operating on cooperative principles and who manage and control the cooperative's business. (Zakic, 2018; Bakić, 2020). The cooperative enjoys special protection of the Republic of Serbia, the autonomous province and the unit of local self-government in performing its predominant activities. A cooperative can be founded by at least five business-capable individuals. The smallest number of founders of a cooperative cannot be persons living in a joint household with the founder. Founders and cooperatives may be domestic and foreign natural persons in accordance with the law. The cooperative is managed by cooperative members. In the management of the cooperative, the cooperative members have an equal right to vote on the principle of "one cooperative member - one vote" in the cooperative assembly.

Today, over 800 million cooperative members in the world are organized into over 750.000 cooperatives. Cooperatives may be established as agricultural or agricultural, housing, consumer, craft, labour, student-youth, social, health, as well as other types of cooperatives for performing production, trade in goods, services and other activities in accordance with this law. In the group of cooperatives with the largest turnover, most are cooperatives in the field of financial services, insurance and trade.

According to the data of the International Cooperative Union, today there are 3 million cooperatives in the world, in which more than 12% of the total world population has its membership. Cooperatives in the world employ about 280 million people, which is 10% of the total number of employees in the world. The amount of total turnover of cooperatives is not known, but the importance of the cooperative sector is evidenced by the fact that the 300 largest cooperatives in the world have a turnover of 2.1 trillion USD per year.

Inter-cooperative connection for the purpose of joint appearance on the market in our area is still in its infancy, despite the long tradition of cooperatives. The possibility of forming complex cooperatives, which was first foreseen by the Law on Cooperatives from 2015, opens perspectives for cooperatives and cooperative members to significantly improve their market positions through this form of connection. The development of inter-cooperative cooperation and connections is one of the fastest ways to improve the market position and competitiveness of cooperatives and cooperative members, which is why the Cooperative Union of Vojvodina supports cooperatives to develop their activities in this direction.

To illustrate, some typical examples are given: In the United States, large energy companies are organized as cooperatives. In the UK, the largest travel agencies are cooperatives. In Germany, every fourth inhabitant is a cooperative member. In France, there are 700,000 employees in 21,000 cooperatives. Credit Agricole is one of the largest financial organizations - cooperatives. Two million Norwegians are co-operatives, organized into 4,000 cooperatives, with a turnover of around € 15 billion a year in trade and services. In Croatia, there are about 700 agricultural cooperatives that participate in the total agricultural production with 15-20% (Agroinfo, 2020)

One of the examples of the application of the cooperative model of organization for the development of rural tourism are diffuse hotels (Đurkin Badurina J. 2018). Diffuse hotels as an innovative form of accommodation intended to unite buildings of different owners for the purpose of providing accommodation services, usually in rural areas and in buildings of historical significance, were created in Italy in response to the depopulation of rural areas. The idea is that diffuse hotels are not "built", but use existing facilities, scattered in several locations within (mostly rural) settlements and have a common reception, catering facilities and other services ("Dall" Ara, 2010.) In Vojvodina, in the past two years, the first complex cooperatives in the field of fruit and vegetables were founded, and already in the first years of their work, they achieved economic effects, which they would not have achieved without association.

Agriculture, fisheries, banking, insurance, consumption, housing, energy, tourism and health are just some of the areas in which cooperative ideas and principles, in modern conditions, find their application. Today, all forms of cooperatives can be classified into 3 sectors and 16 subsectors (Zakić, Z., 2001):

-Primary sector for food production, which includes three subsectors: agriculture, fisheries and forestry;

-Secondary industrial sector with two subsectors: small and medium cooperative industry and crafts, and

-Tertiary sector (service sector), which covers eleven subsectors: banking, credit unions and insurance (these three make up the financial subsector), consumption, independent retail trade with wholesale, housing, health, social protection, transport, utilities and other activities that belong to unspecified sectors, where, for example, multifunctional, educational, publishing, tourism and other types of cooperatives can be established.

According to the official data of the International Cooperative Union, the largest number of cooperatives in Europe is located in the tertiary, (service) sector. This conclusion was made on the basis of the total number of cooperatives, the number of individual members, as well as the number of employees. The fact that in the countries of the European Union the membership in cooperatives covers over 22% of the total population, testifies to how important the cooperative sector is as a lever of development. (Victoria logistic, 2020)

About 750,000 cooperatives operate worldwide and have a membership of about a billion people. When it comes to Serbia, 2,124 cooperatives are registered in it (of which 67.1 percent are agricultural), and 123,000 citizens are members of some of the cooperatives. From 2017 to mid-2020, about 720 new cooperatives were established. The importance of cooperative organization has been especially recognized by the EU countries, which have solved numerous problems with the development of cooperatives, primarily those of a social and economic nature. It is estimated that about three billion people are connected, in various ways, with the work of cooperatives. Cooperatives provide more than 100 million jobs worldwide, which is 20% more than multinational corporations. (Agroinfo, 2020).

The number of rural tourism cooperatives is rapidly increasing worldwide. Through tourism cooperatives, rural populations can generate important and complementary income. For example, agri-tourism cooperatives in Italy emphasize home-made and locally produced foods for tourists that seek a specifically rural or farm experience. Through tourism cooperatives, members may also increase their say in the overall nature, extent, speed and other modalities of tourism development in their area. (International Labour Office, 2011)

In Serbia, the development of tourist cooperatives is still in its infancy. Currently, according to business data from the Business Registers Agency, there are only four cooperatives in the territory of the Republic of Serbia that deal with the development

of tourism in rural areas of Serbia. These are: Eco-tourist cooperative in Zaovine, the Vineyard-cellar-tourist cooperative in Erdevik, the Agricultural-touristic cooperative from Aleksandrovac and the Tourist-social cooperative from Vrnjačka Banja. There were two other cooperatives of this type: Agritouristic cooperative from Dimitrovgrad, which is in liquidation, and Agricultural-production, touristic cooperative from Nova Varoš. Both of these companies have been deleted from the Register and have not existed since 2017, that is 2011.

Research methodology

According to (Đoković F. et al. 2007) the area of research is personal opinion that cooperatives' general managers may have on how these touristic cooperatives (active ones) would revitalize tourism through the cooperative business and what positive impacts would tourism have on rural areas. For the research purpose of the current development of tourist cooperatives, their role and importance in rural areas of Serbia, the semi-structured interview method was used (Ayres 2008). Pre-formulated but open questions were asked. The interview was conducted in May, by e-mail and telephone with the directors whose cooperatives are officially registered in the Business Registers Agency. The following hypotheses were set:

H1- increase of accommodation capacities for receiving tourists,

H2- village renewal and return of young people through job opportunities,

H3- increase in demand in the tourism market for rural tourism.

Questions and answers were collected, processed and presented in tables, for each of the cooperatives. Touristic cooperatives in tables are presented as numbers (1-4).

Results & Discusion

Table 1. showed the following: out of the total number of active cooperatives on the territory of the Republic of Serbia, two cooperatives were formed this year. Based on their answers, one of them plans to start business activities in the second half of the year, while the other newly formed cooperative achieved good results in business, and in the socio-economic development of the place where it is founded, not as a cooperative, but in terms of individual entrepreneurs, who have decided to cooperate this year and raise their business to a higher level. The other two cooperatives, which have existed before, are currently in the dormant phase, (do not generate turnover). The reasons for that, as it was learned in the conversation with them, are internal, problems with the administration of certain cooperative members, as well as insufficient motivation of cooperative members to associate. As the result of all above mentioned, it can be concluded that tourist cooperatives in Serbia are still in their infancy, so their impact on the development of rural tourism and the rural economy can only be discussed through a projection, in the future.

Table 1. Work, turnover, predominant activity and focus of the cooperative

Q. Coops.	Date of founation	Cooperative Orientacion	Fokus of the cooperative	Market activity? Yes/ No	Generating turnover? Yes/ No	Business results are positive? Yes /No
1.	13.06.2018	-Agriculture -Tourism -Ecology	-Accomod. -Cultural inheritage	No	No	No
				Currently at a standstill with business		
2.	24.11.2008	-Agriculture -Wine tourism	-Accomod. -Gastronomy - Return of youth to rural areas	No	No	No
				Standstill due to internal problems, starts business in the second half of the year		
3.	18.03.2021	-Tourism	-Accomod. -Gastronomy -Return of youth to rural areas	No	No	No
				Newly formed cooperative		
4.*	13.05.2021	-Tourism -Ecology -Social aspect	-Accomod. -Gastronomy -Cultural inheritage -Connection and cooperation with institutions - Return of young people to rural areas **	Yes	Yes	Yes
				* Very young, has turnover and acheves business results not as a cooperative, but as individual economic entities but now it organizes its work into a higher form of cooperative association. ** Purchase, promotion and protection of certain products from the mountain, purchase od teas, medical herbs, mushrooms, fruit, vegetables, cheese, cream, meat, and meat products and their placement through restorants.		

Source: Author's research

All tourist cooperatives focus mostly on tourism in terms of accommodation (100%), then gastronomy (75%), the return of young people to the countryside (75%), cultural inheritage (only one of them), and connecting with other relevant entities (25%). In addition to the classic tourism in their activities they are oriented to agriculture, ecology, while as many as 75% of them are oriented to the aspect of the return of young people to the countryside. Thanks to the development of the cooperative, twelve young people have already been returned to the mountain of Goč and their livelihoods have been provided through good salaries, and based on that, previously set hypotheses can be confirmed - H1- increase of accommodation capacities for receiving tourists and H2- village renewal and return of young people through job opportunities.

Table 2. Positive and negative factors that enable or prevent the work of the cooperative

Cooperative	Positive factors	Negative factors
1.	- Ecologically preserved environment	- Extensive and complicated administration - Impossibility of association - Difficulcy of finding a partner and lack of interest in cooperation - Poor communication with partners - Insufficient coop. with tour. institutions - Lack of economic resources - Lack of traffic infrastructure - Outflow of population - Lack of support from public institutions - Pandemic outbreak
2.	- Interest of the local community in cooperation - Assistance and support from state institutions - Ecologically preserved environment - Good traffic connections with larger cities - Great tourist potential of the area - Pandemic outbreak	- Outflow of population
3.	- Interest of the local community in cooperation	- Insufficient coop. with tour. institutions - Lack of economic resources
4.	- Ecologically preserved environment - Good traffic connections with larger cities (municipalities, but not villages) - Great tourist potential of the area - Higher influx of tourists and higher need for products	- Impossibility of association - Insufficient coop. with tour. institutions - Lack of economic resources - Lack of traffic infrastructure - Outflow of population - Lack of support from public institutions - Pandemic outbreak

Source: Author's research

Based on the answers given in Table 2, it can be seen that the importance of cooperative development is largely recognized by the local community (50%), that cooperatives are situated in an environmentally friendly environment (75%), and that partly there are good traffic connections, but the infrastructure in some areas is quite poor (50%), the outflow of population is huge (75%) and cooperatives do not have enough material funds for work and development (75%). Factors that most often aggravate development, and which cooperatives encounter in practice, are lack of support from institutions

(75%), outflow of population (75%), lack of infrastructure, impossibility of association (50%), difficulcies in finding partners, poor communication with business partners. It is interesting that the outbreak of a pandemic is a factor that helps development in some cooperatives, while in some it has been a problem in the work so far.

Table 3. Type of support, impact and level of tourist development of the place (village)

In your personal opinion, is the place where your cooperative operates touristically developed?			
1.	**2.**	**3.**	**4.**
Yes, it is already well developed in terms of tourism	It is not developed for tourism, but it has a huge potential for development	It is not developed for tourism, but it has a huge potential for development	It is not developed for tourism, but it has a huge potential for development
What hinders the development of tourism (as a whole) in the place (area) where you do business?			
1.	**2.**	**3.**	**4.**
- Lack of accommod. capacity - Poor infrastructure and traffic connections - Lack of support from pub. institutions	- Lack of accommodation capacity - Unrecognizability in the tourist market (insufficient promotion)	- Lack of accommodation capacity - Lack of support from public institutions	- Unrecognizability in the tourist market (insufficient promotion)
Do you think that the existence of your cooperative has a significant impact (economic, social, tourist, environmental…) on the local community?			
1.	**2.**	**3.**	**4.**
It could have	No	Yes, to a large extent	Yes, to a large extent
Is the support of institutions important to you?			
1.	**2.**	**3.**	**4.**
It is necessary to a lesser extent	It is crucial	It is crucial	It is crucial
What kind of support do you need?			
1.	**2.**	**3.**	**4.**
Institutional (Local education and informing community about the importance of coops, material assistance)	Institutional (Funds for equipping and building bungalows and restaurants)	Institutional (Credit funds for building a planned village with a capacity of 30 beds)	Institutional (Regional and national connection, necessary material resources)

Source: Author's research

All cooperatives (100%) have made it clear that institutional (state) assistance is crucial or to a lesser extent necessary for the further development of their business, mostly in material terms (Table 3). There is also a need for additional education of the local community on the importance of the cooperatives (25%), as well as connecting cooperatives with institutions on a national and regional level in terms of support. Most of the municipalities

in which the cooperatives are located are not developed in terms of tourism, although they have the potential to develop (except for the cooperative numer 4, which as a destination, that is, the municipality to which the cooperative belongs, is already well developed). The development of these cooperatives, according to the answers given, could change that. Namely, 50% of respondents said that touristic cooperatives have a large overall impact on the rural economy, one answered that it could have a large impact in the future (currently the business is dormant), while only one respondent stated that it has no impact at present (still no turnover, newly formed cooperative).

Table 4. Vision of future business and additional notes

Describe the vision of your tourist cooperative's business in the future	
1.	To be a center for tourist information (locally), to unite the tourist offer of the place, to generate income, for accommodation and tourism promotion.
2.	Initiation of work with the construction of accommodation bungalows with an unconventional restaurant for wine tasting, on two lakes. Development of rural tourism. The return of young people to the countryside, primarily their members.
3.	Segments of social contacts, culture and sports. The plan is to build an ethno-village in the rural area of Serbia
4.	Placing local products from the mountains (two restaurants), zip line, horse stables, riding on mountain terrains, setting up an amusement park for children with the aim of employing primarily the local population. Construction of a trim trail for walks, maybe paragliding, climbing rocks and a town that spreads on a four acress with all the infrastructure, spa and other facilities. Establishment of a festival of ecological character (the festival from 25. to 27. June will have an entertaining character, will contain information about the offer of the mountain, education and work action with the camp where participants will be involved in cleaning, with recycling stands), afforestation, raising awareness of ecology, renewable energy sources.
Additional notes	
1.	Until recently only the elder population lived, but now younger people are coming and inhabiting the area which means recognizing the potential by younger people. Until a couple of years ago, the average age was 65 to 70, in a place with only 300 to 400 people.
2.	Depopulation of the village, once lived about 5,000 people, and now only about 1,000. For now, the complex is visited only by those who know that it is located there.
3.	No additional notes
4.	The population finds it difficult to market their products, they do not have a protected product, the fruit region is exceptional, the fruit is of first-class quality, the aspiration is to protect the geographical origin, the problem of transport and traffic. There are no buses or any other form of public transport.

Source: Author's research

As it can be seen from Table 4, touristic cooperatives in the places where they are located plan to build accommodation facilities for tourists, in the form of ethno-villages, bungalows and smaller hotels, restaurants and places for tasting food and drinks (wine), as and organizing a number of other additional facilities that would complement the tourist offer of the village, such as organizing events and sports events, entertainment and theme parks, horseback riding, zip-line, marking trim trails for walking and hiking, climbing rocks (adventure tourism). Such an offer would significantly contribute to higher tourist demand and higher attendance of these rural areas, based on which hypothesis H3 is confirmed - an increase in demand in the tourist market for rural tourism. Cooperatives could unite their offer, be a center for informing tourists about the offer of the village, but also about recycling, renewable energy sources, etc. In that way, the problem of depopulation and departure of young people would be solved, and that would have a positive impact on the overall economy of the village.

The biggest problem of rural development, and thus of touristic cooperatives in rural areas of Serbia so far has been the increasing depopulation of villages, the departure of young people from rural areas and the rest of a small number of elderly people. Another problem they face is the lack of support from relevant state institutions, primarily in material terms. The third problem is the insufficiently developed infrastructure and network of traffic roads in rural and mountainous-rural areas of Serbia. Regarding to this, for the first time this year, the Government of the Republic of Serbia developed support through measure 7 (seven). Diversification of agricultural holdings and business development is aimed at creating new employment opportunities in rural areas, and thus reducing dependence on agriculture and improving quality and the availability of basic services and infrastructure. The focus of diversification within the IPARD II program is rural tourism, due to the existence of a long tradition and great potential and the need for further development of the sector. (Ministry of Agriculture, Forestry and Water Management, 2021)

In a public competition for the implementation of the Program to support the development of cooperatives by awarding grants for business improvement and technological development of cooperatives throughout territory of the Republic of Serbia for 2021, announced by the Ministry of Rural Care, it is stated in the third point that the applicants for the competition may be, among others, agricultural or agricultural cooperatives whose registered activity is engaged in rural tourism - accommodation and food services (tourist cooperatives), which have acquired the status of a legal entity by entry in the register kept by the entity responsible for registration (Business Registers Agency), until the announcement of the public competition.

This Program aims to systematically improve the business of cooperatives in agriculture, rural tourism and crafts, increase the number of cooperatives, develop the cooperative system and increase competitiveness in the market, as well as create opportunities for cooperatives to contribute to sustainable development of the local community. (Ministry of Rural Care, 2021)

Conclusion

This paperwork confirms the hypotheses about increasing accommodation capacity for receiving tourists, rebuilding villages and returning young people through creating new jobs and increasing demand in the tourism market for rural tourism, and as a result, touristic coorporatives can make important contributions to socio-economic development of rural areas. At the same time, they play a role in ensuring the growth of the rural welfare. The growing demand for the rural areas may provide an important contribution to the development of tourism in terms of income to the producers in these areas.

The availability of IPARD funds, strengthening social capital and market links, should strengthen rural communities and contribute to their sustainable development in the future. (Ministry of Rural Care, 2021)

Despite all the problems, the population in rural areas increasingly recognizes the importance of establishing and strengthening tourist cooperatives, which, through their work in the future, could be the backbone of the development of very attractive but underdeveloped rural areas in Serbia. „Cooperatives are development tools and should promote both social empowerment and economic goals" (Patrie, 1998, p. 11)

The most effective method of rural development is to increase rapidly the welfare of the people directly or indirectly. The economic benefits of creating cooperatives for the development of rural tourism offer are reflected in the opportunities for cooperation and investment in overcoming the challenges of rural areas through investing the roles that each member brings to the cooperative. In addition, by forming tourism cooperatives, rural areas would get stronger platforms for the development of rural tourism, as well as a good basis for cooperation on projects of local importance, which would positively affect the creation of social capital in the community. (Đurkin Badurina J, 2018)

It is important to ensure support for sustainable rural development and living standards of people dependent on agriculture by strengthening cooperatives and stimulating sustainable ways of production, processing and distribution of food and forming clusters through which farmers will connect, both with each other and with certain scientific institutions. with the aim of more rational use of available natural resources and human resources.

Conflict of interests

Authors declare no conflict of interest.

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POVERTY STATUS AND ITS DETERMINANTS IN RURAL HOUSEHOLDS OF ENDA-MOHONI WOREDA, NORTHERN ETHIOPIA

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ABSTRACT

This research generates specific, contextualized identification of existing poverty status and poverty causing factors in Enda-mohoni woreda in Tigray Region, Ethiopia. Agroecology based cluster sampling technique was employed to select 154 household heads. Logit model was used to analyze household poverty status and FGT poverty index estimation model for poverty incidence analysis. The poverty analysis found a 30.9% headcount ratio, 4.4% poverty gap ratio, and 1% poverty severity. Furthermore, the result of the logistic regression revealed that among the explanatory variables used in the model, family size and agroecological location of the household head were found to positively influence HHs' poverty status at (P<0.01) and (P<0.05) respectively. Whereas, owning livestock and marital status of the HHH were found to negatively influence HHs' poverty status at (P<0.05) and (P<0.1) respectively. It is with appropriate policies that recognize the importance of poverty features and trends would it be possible for more people to make positive exits from poverty risk.

Introduction

Poverty has been a widespread phenomenon with varying degrees of features that have been existing in the world in general and in developing countries in particular. In Ethiopia, poverty is multifaceted and deep-rooted (Addae-korankye, 2014; Deressa

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& Sharma, 2014). By any standard, the majority of people in Ethiopia are among the poorest in the world (Bogale et al., 2005).

In most developing countries a large proportion of the poor are in rural areas and their poverty is generally far more severe than in urban areas. The causes of rural poverty are complex and multidimensional involving forces of nature, social, political, and environmental aspects. likewise the rural poor are quite diverse in their resource endowments and links to markets, government, and their strategies to deal with poverty vulnerability and risk (Khan, 2000). Poverty in Ethiopia has many underlying causes resulting in multiple deprivations that have been persistently continuing the situation in rural and urban regions of the country. Poverty seems to persist in large sections of the rural society with little hope for a substantial improvement in the living conditions of the rural poor soon (Bogale et al., 2005; Deressa & Sharma, 2014).

Poverty indices do not show a uniform trend at different times conducted by different researchers and organizations. The implication is that, as there are people who could fall into poverty situation and some others escape from poverty. This is because of the dynamic nature of poverty (Goshu, 2013). The incidence and distribution of poverty have also remained in varying degrees of magnitude in the regional states in Ethiopia that might be due to the varied nature of poverty causes both in rural and urban areas. According to ENPC (2017), the poverty headcount index was estimated 27 % Tigray (31.1 % in the rural areas and 14.2 % in urban areas) which is quite greater in rural areas than the national level of poverty headcount index.

According to the Enda-mohoni woreda[5] early warning and food security office annual report of (2018/19), 31,534 productive safety net program users, and 10,506 emergency aid users, 42,040 total beneficiaries which accounted 42.6 % of the total population are currently under the emergency care of government and foreign donor groups support. And no evidence showed how the agricultural and extension workers well perceived at knowing the main factors that affect the rural farm households to remain in food and material aids for a longer period.

Although most of the literature focuses on indicators of deprivation such as income, access to social services, etc., the choice of indicators to measure the level of poverty can often be arbitrary and hence may not reflect the full-scale measurement of unmet basic needs in different social contexts (Bogale, 2011; Demeke et al., 2003; Mesele et al., 2018; Tsehay, 2012). Moreover, current statistical information offers little or no disaggregated data that can be useful at woreda level of government offices for planning and poverty reduction purposes. poverty statistics are generally compiled at national levels, it is still a difficult task to compile poverty profile data in remote rural areas and to ensure that every woreda has its own poverty profile. Besides to this, the World Bank (2018) in its study on poverty reduction strategy paper (PRSP), emphasized that countries, regions, and specific communities are expected to measure

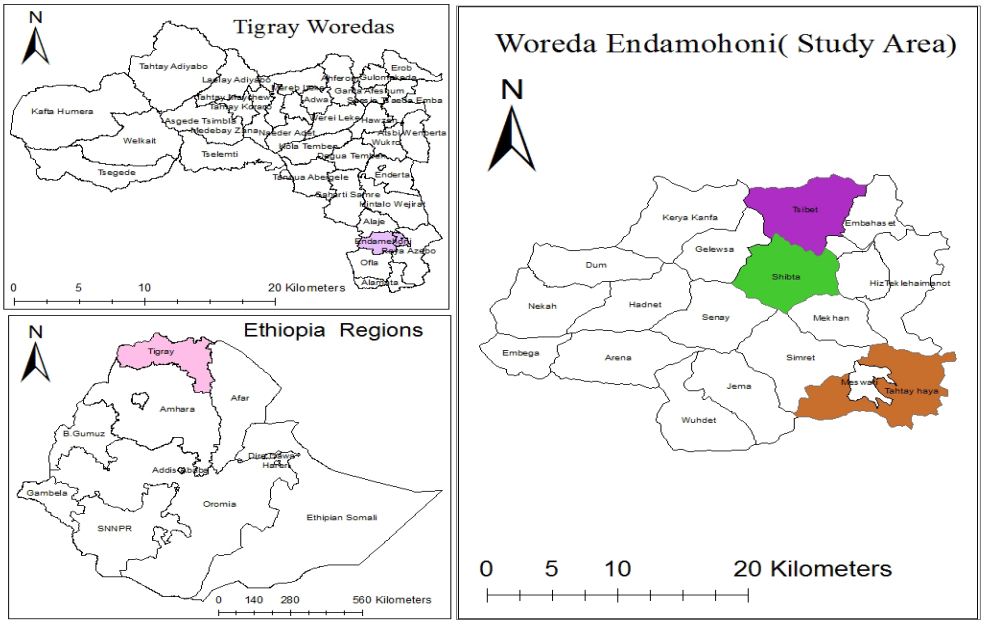
5 *In the Ethiopian context, woreda is the fourth-level administrative division followed by kebele.*

and analyze the domestic poverty profiles and be able to identify the specific causes of poverty to operationalize actions to reduce poverty. Therefore, this study measures the existing poverty status and its major determinants of poverty in the study area. It is also intended to help local extension/social workers, agricultural experts, administrators, and nongovernmental organizations in their endeavors towards enhancing poverty reduction strategies.

Materials and methods

The study area is located between 36^{0}27′0″ - 39^{0}59′30″east, 12^{0}15′0″ - 14^0 50′20″ north at about 120 km south direction of Mekele which is the capital city of Tigray, Ethiopia. The woreda has 18 rural kebeles in which they have diverse demographic and topographic compositions. It has three agro-ecological zones mid-land (*weyna-dega*) that ranges from 1637-2300 m.a.s.l, highland (*dega*) which ranges from 2300-3200 m.a.s.l, and moist high land (*wurch*) that ranges greater than the elevation of 3300 m.a.s.l (FAO, 2012). The agroecological composition of the study area accounts for 18.72 % of mid-land, 73.46 % of highland, and 7.82 % of moist high land (Enda-mohoni, BoARD, 2020).

Figure 1. Administrative map of Enda-mohoni woreda



Source: Own map preparation using arc GIS and satellite image (2020)

Data type and source

This research relied on both quantitative and qualitative types of data. The researchers gathered information on the nature of poverty causes; monthly consumption, demographic and socioeconomic data from the sample farm households, households

with their family size list, household list data, from kebele extension worker's office (DAs), main food items list, food security impact assessment report from Enda-mohoni woreda office of agriculture and rural development and woreda food security office, farm size from woreda land administration office. The researcher used structured questionnaire interviews and key informant discussions. Secondary data were also collected from officially published and unpublished materials, reports, statistical bulletins, and other materials used which were believed necessary information sources.

Data analysis procedure

Econometric techniques were applied, to estimate the relationship between the dependent variable poverty status and a combination of independent variables like demographic and socioeconomic variables. Such models approximated the mathematical relationships between explanatory variables and the dependent variable that is always assigned qualitative response variables. In this study, the binary logit model was used to analyze the determinants of poverty (Gujarati, 1995) because it can quantify the marginal effects of the independent variables over the dependent variable poverty and was widely used in many poverty empirical research works. Also, the Foster-Greer and Thorbecke (1984) poverty indices model was used to determine poverty indices as this model has the quality and consistency of additivity behavior towards total poverty.

Specification of the binary logit model

A Logistic model is a univariate binary model. For dependent variable Y_i there are only two values, 1 and 0, and independent variables X_i that is:

$$Prob(Y = 1) = (F(X_{ib})) \quad (1)$$

Here, b is a parameter that needs to be estimated and F is logistic cumulative distribution function(CDF). The logit model was preferable due to its lower computation cost, its flexibility, easy computation, and wide use in many empirical works as compared to other techniques of such type by Green (2003). The functional form of the cumulative logit model is specified as follows:

$$Prob(event) = p_i = E(Y = 1/X_i)) = \frac{1}{1+e-(\beta_0+\beta_i X_i)} \quad (2)$$

Where;

β_0, intercept, and β_i coefficients to be estimated from the data; X_i is the independent variable, e is the base of the natural logarithm for more than one independent variable. Then the empirical model is specified and written as:

$$Prob(poor) = P_i = \frac{1}{1+e^{-Z}} = \frac{e^Z}{1+e^Z} \quad (3)$$

Equivalently, $Prob(non\ poor) = 1 - P_i = \frac{1}{1+e^Z}$ (4)

Where: z is the linear combination of a vector of independent variables

Again in order to estimate the logit model, the dependent variable was transformed by taking the natural log of Equation 4 as follows:

$$L_i = \left(ln\frac{P_i}{1-P_i}\right) = Z_i = \beta_0 + \beta_1 X_1 + \cdots + \beta_n X_n \quad (5)$$

Where: L_i is the log of the odds ratio, linear not only in the explanatory variables but also in the parameters. L is the logit, and hence it is the logit probability model. It is, thus, noted that the logistic model defined in Equation 5, is based on the logit of Z_i which is the stimulus index. This verifies that as Z_i ranges from $-\infty$ to $\infty +$, P_i ranges between 0 and 1.

Measuring poverty

Foster, Greer, and Thorbecke (1984) have proposed a class of poverty measures built on this idea that have found their way into much of the poverty analysis published by the World Bank. Income or expenditure is the primary deciding factor to measure absolute poverty. The two measures of poverty are absolute and relative poverties. But absolute poverty was used for this study. Because of absolute poverty measures based on predetermined (subsistence) level of per capita consumption expenditure of the population. It portrayed a lack of access to basic needs(minimum) amenities like food, clothing, and shelter. Households that lie below this poverty line were considered as poor and above the poverty line nonpoor. The main poverty measures(indices) used for this study are presneted below:

The FGT model is be given by:

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{q}\left[\left(\frac{Z-Y_i}{Z}\right)\right]^\alpha \quad (6)$$

Where Z is the poverty line, Y_i is the expenditure of the i^{th} poor household, N is the total number of households and q is the total number of poor households.

If α=0, index p_α becomes: $p_0 = \frac{q}{N}$, which is the *head-count index.*

If α = 1, the poverty index p_α becomes:

$$P_1 = \frac{1}{N}\sum_{i=1}^{q}\left[\left(\frac{Z-Y_i}{Z}\right)\right] \quad (7)$$

,which is the poverty gap index.

If α=2, the poverty index p_α becomes:

$$P_2 = \frac{1}{N}\sum_{i=1}^{q}\left[\left(\frac{Z-Y_i}{Z}\right)\right]^2 \quad (8)$$

,which is the poverty severity index or squared poverty gap index.

Table 1. Variables and their expected signs

S/no	Variable name	Variable description	Measurement	Expected sign
1	Poverty	Probability of being poor	Dummy (1=poor, 0 =non-poor)	dependent
2	HHHSex	Sex of the household head	Dummy(male=0,=female=1)	-/+
3	FSize	Family size of the households in Adult equivalence	Continuous variable measured in number	+
4	HHHAge	Age of the household head	Continuous variable measured in years	-/+
5	Dratio	Dependency ratio of household	Continuous variable measured in percent	+
6	HHHmrst	Marital status of household	Dummy(divorced=1, married=2, single=3, , widowed=4)	+/-
7	Levedu	Education of household head	Dummy(literate=1, illiterate=0)	-
8	LSize	Total size of cultivated land	Continuous variable measured in hectare	-
9	TLU	Total livestock owned by sample households	Continuous variable measured in TLU	-
10	foodwr	Household involvement in labor participation	Dummy(1 if the household participate,0, Otherwise)	-
11	offfarmuse	Household off-farm activity	Dummy (off farm income, yes=1, no= 0)	-
12	Hsave	Saving behavior of household	Continuous variable measured in Birr if the household has monthly saving	-
13	accmktig	Household access to market	Dummy(if the household access to market, Yes=1, No=0)	-
14	accexten	Household access to extension services	Dummy(if the household has access to extension service, Yes = 1, otherwise=0)	-
15	irruse	Household irrigation use	Dummy(household irrigation use, yes=1, no=0)	-
16	Agro	Household living in different Agroecology	Dummy(if the household live in, dega=1, weynadega=2, Wurch=3)	-/+
17	AssetV	Household current Assets	Continuous variable measured in Birr	-

Results and Discussion

Incidence of Poverty in the study area

Setting the poverty line

The Cost of Basic Needs (CBN) approach is employed based on the procedures by Ravallion (1995) and Wodon (1997) to determine the poverty line. To avoid biases in consumption of households, the survey was conducted in February 2020, assuming that as the optimum period for food and non-food consumption of households and were collected the monthly average food consumption to consider for poverty line estimation. Having such a rationale for the CBN, the following steps were employed to obtain the poverty line:

1. Identify and select the food items commonly consumed by the majority of the lower quartile of the poorest and 17 food items (Annex 1) were identified from the survey.
2. Each bundle of the food items is weighted with the appropriate unit of measurement like kilograms, liters according to the nature of food items.
3. Each unit of food items consumed by a household in a month is divided into the corresponding AEU of the HHs to get the number of kilograms each adult individual gets in a month.
4. Sum all food per adult units consumed in a month to get the monthly requirement and divided by 30 days to compute the daily requirements of food for each adult equivalent unit in the HHs.
5. Assuming 2200kcal as the minimum calorie required per adult equivalent per day in Ethiopia, we estimated the cost of meeting this food energy requirement.

Thus, the food poverty line is approximately estimated ETB 517.4 per month per adult equivalent or ETB 6209 per year which is much greater than the national food poverty line of ETB 3772 set by (NPC, 2015/16) by 64.6%, with average increment rate of 12.9%, inflation per year was treated. Once the food poverty line was being computed, the total poverty line was derived by taking the average food share of the first lower (first quartile) proportion of the population (Maru, 2004) which resulted in a total poverty line (PL) of ETB 708.33 per month or ETB 8500 per year per adult equivalent. This computed total PL is greater than the national PL, found in (NPC, 2015/16) by 18.32%, with an annual increment rate of 3.7% (see Table 2). This computed value of the food PL in the study area might be the result of the continuous food and non-food price increments at the local and national levels of market price changes.

Table 2. Poverty lines at market price

S.No	Poverty line	Value in Ethiopian birr at market price
1.	Food poverty line	6209
	Nonfood poverty line	2291
	Total poverty line	8500
Source: Own household survey computation, 2020		

This market price poverty line reflects the norm, the culture, the taste and preference of the society's' situation in the study area. This poverty line[6] (ETB 8500/adult/year) was adopted for this study and used to estimate the poverty indices in the study area. The process of poverty line calculation was exhaustively demonstrated in Annex 1.

Identifying the poor

In terms of poverty status, 113(73.38%) of the sampled HHs were found to be non-poor and 41(26.62%) were poor HHs. Further, in terms of the gender composition of the sample HHs, 55(35.71%) are female-headed and 99(64.29) were male-headed. In terms of gender and poverty status, 44(80%) of the female-headed were found to be nonpoor and 11(20%) were poor. Of the male-headed HHs, 69(69.70) were non-poor and 30(30.3%) were poor. Implying that, the highest number of the poor heads were from male households which were greater by 19(46.34%).

Table 3. Poverty decomposition of the sampled households by gender and sex

Poverty status	Gender of HHHs			
	Female	Male	Total	%
Poor	11	30	41	26.6
Non-poor	44	69	113	73.4
Total	55	99	154	100
Source: Own household survey computation, 2020				

The level of poverty that measured using the Head Count Index (P_0), Poverty Gap Index (P_1), and Poverty Severity Index (P_2) (Foster, Greer, and Thorbecke, 1984)) poverty indices class family are presented in Table 4. Incidence of poverty was analyzed, first, using the total PL (ETB 8500 per adult equivalent expenditure per year) and then the food PL of ETB 6209 per adult equivalent expenditure per year. Accordingly, 30.87% of the respondents were living below the poverty line (ETB 8500) with the poverty gap index of 4.4 % and poverty severity index of 1 %.

6 $$PL_{=}\left(\frac{\frac{FPL}{ASB}}{TexpLow}\right)=\left(517.4/\frac{572670.65}{784050.73}\right)=\frac{517.4}{0.7304}=8500$$

Where: PL is the total poverty line
FPl : is food poverty line
ASB: is average food share of the bottom 30%
TexpLow: is total expenditure of the bottom 30%

According to MoFED (2012), the incidence of rural poverty in Tigray, the head count index, was 57.9 % in 1995/6 rose to 61.6 % in 1999/2000 and declined by yearly decrement rate of 3.34 % till 2004/05. Further, it was reduced by 5.69 % per year until 2010/11. Moreover, a recent study conducted in Ethiopia in 2015/2016 by national planning commission (NPC, 2017), showed that the incidence of poverty in rural and urban stood at 23.5%, 25.6%, and 14.8 % respectively. Further, the poverty headcount index was estimated 27 % in Tigray (31.1 % in the rural areas and 14.2 % in urban areas) which is quite greater in rural areas than the national level of poverty headcount index. The headcount ratio (30.90%) in the rural study area again is slightly less by 0.23 % compared to the regional rural poverty and greater by 4.27% compared to the national rural poverty level (see Table 4).

Table 4. FGT poverty indices of sample households

Poverty indices	Index number	
	Food poverty	**Total poverty**
Head count(P_0)	0.28(0.04)	0.31(0.04)
Poverty gap(P_1)	0.05(0.01)	0.04 (0.01)
Squared poverty gap(P_2)	0.01(0.01)	0.01 (0.01)
Source: Own household survey computation, 2020		

Poverty decomposition by population groups

Estimating the total poverty index was the first step in the study of poverty. However, decomposing poverty indices by subpopulation groups help the poverty analysis to detect the main sources of poverty and to indicate policymakers to make efficient policies to reduce poverty. Thus, population group decomposition makes it possible to identify subgroups with greater poverty and can be useful to design and target cost-effective antipoverty interventions. Further, this decomposition can be used to evaluate each subgroup in relative and absolute contribution to total poverty.Accordingly, Kebele wise poverty findings of this study indicated that the highest incidence of poverty was observed in *Tahtay-haya* with headcount index of 0.416, with a poverty gap index of 0.061 and poverty severity rate of 0.014, and the lowest level of poverty was recorded in *Tsibet* with headcount index of 0.191 and poverty gap index of 2.1 % and poverty severity index rate of 0.6 %. The second-lowest incidence of poverty was in *Shibta* with headcount index of 27.88 %, and far by 4.2 % from the PL with a squared poverty index level of 1.03 % (see Table 5) .

Table 5. Incidence of poverty by Kebeles(agro-ecologies)

Kebele(Agro ecology)	Po	P1	P2	Poverty Line
Tsibet (Wurch)	0.19(0.07)	0.02(0.01)	0.01(0.01)	8500
Shibta (Dega)	0.28(0.07)	0.04(0.02)	0.01(0.01)	8500
T.haya(Weyna-dega)	0.42(0.07)	0.06(0.01)	0.01(0.01)	8500
Population	0.31(0.04)	0.04(0.01)	0.01(0.01)	8500

Source: Model output from the household survey, 2020

Note: Values in brackets are standard deviations

Absolute poverty contribution is the share of one kebele's poverty towards the total poverty whereas the relative poverty contribution is the share of one kebele's poverty out of a hundred. The relative and absolute contribution of the three kebeles towards the total poverty incidence, poverty gap, and poverty severity gap was different. Accordingly, Table 6 presents the poverty contribution of each kebeles by agroecology.

Table 6. Absolute and Relative poverty contributions by kebeles

Kebele	P_0	Population share	Absolute contribution	Relative contribution
Tsibet	0.19 (0.07)	0.28(0.04)	0.05(0.02)	0.17(0.06)
Shibta	0.28(0.07)	0.33(0.04)	0.09(0.03)	0.3(0.08)
Tahtay-haya	042(0.07)	0.39(0.04)	0.16(0.03)	0.53(0.08)
Population	**0.31(0.04)**	**1.00(0.00)**	**0.31(0.04)**	**1.00(0.00)**
	P_1			
Tsibet	0.02(0.01)	0.28(0.04)	0.01(0.04)	0.13(0.08)
Shibta	0.04(0.02)	0.33(0.04)	0.01(0.01)	0.32(012)
Tahtay-haya	0.06(0.01)	0.39(0.04)	0.02(0.01)	0.55(0.11)
Population	**0.04(0.01)**	**1.00(0.00)**	**0.04(0.01)**	**1.00(0.00)**
	P_2			
Tsibet	0.02(0.01)	0.28(0.04)	0.01(0.01)	0.13(0.09)
Shibta	0.04(0.02)	0.33(0.04)	0.01(0.01)	0.32(0.11)
Tahtay-haya	0.061(0.01)	0.393(0.04)	0.024(0.01)	0.545(0.11)
Population	**0.04(0.01)**	**1.00(0.00)**	**0.04(0.01)**	**1.00(0.00)**

Source: Model output, 2020

Note: Values in brackets are standard deviations

The absolute and relative contribution to the total poverty show that *Tsibet* has the lowest absolute contribution of 5.3 % with the relative contribution of 17.04% followed by *Shibta* with 9.23% absolute contribution and 29.91% relative contribution.The largest absolute contributor to the total poverty was *Tahtay-haya* having an absolute contribution of 16.38% and a relative contribution of 53.04% recorded in the headcount ratio (see Table 6). According to the theoretical and practical point of view, moisture is a determinant factor for crop and livestock productivity (FAO, 2018). As expected, the highest elevation with relatively better moisture content has been found in *Tsibet*, followed by *Shibta* and the lowest elevation with moisture stress is in *Tahtay-haya*. Thus, the poverty incidence was much lower in *Tsibet* than *Shibta* and the highest poverty incidence was recorded in *Tahtay-hay*a kebele that was most likely limited by moisture and/or rainfall stress.

Econometric analysis: *Determinants of poverty using binary logit model*

A binary logit model was used to identify the major determinants of poverty of households. Using HHs poverty status as a dependent variable whereby a value of 1 has given to households being poor and 0, otherwise. Considering the absolute poverty line, we looked through factors that determine HHs poverty to fall below the poverty line.

Interpretation of variables from the logistic output model

***Family Size*:** In line with our prior expectation, the family size was found to have a positive relationship with the poverty status of rural HHs and is statistically significant at $P < 0.01$. The marginal effect shows as family size increases by one member, the probability of being poor will increase by 7% ceteris paribus. This could be as family size increases the demand for basic needs increases like access to cultivable land, educational and health facilities with no possibility to get, consequently, the household consumption per adult equivalent and the per capita land size start to fall. Having more household size aggravates the chance of being falling into poverty. This was consistent with the findings of (Bogale et al., 2009).

Owning Livestock (TLU): As hypothesized the livestock owned by the HHs has a significant and negative relationship with the poverty level of the HHs. The marginal effect 0.039, implies that, ceteris paribus, the probability of being poor decreases by 3.9% as the household increases by a unit of TLU and is statistically significant at < 0.05 , ceteris paribus. Livestock rearing helps the poor in many ways. The finding is supported by (Upton & Otte, 2004).

***Marital status of Household Head**:* as expected, marital status determines the status of household poverty that married, single, and widowed households have a negative relation with poverty status of sample households given reference variable divorced households and were statistically significant at $P < 0.1$ and $P < 0.01$ respectively. Being the household head is married, the probability of falling into poverty decreases by 28.2% at $P < 0.1$ as compared to a divorced household head, ceteris paribus. Furthermore, as the household head is single, the probability of falling into poverty decreases by 28.1% at less than a significance level of 10% as compared to a divorced household head, ceteris paribus. And as the HHH is widowed, the probability of falling into poverty decreases by 41.7% at $P < 0.01$ as compared to divorced HHH given other factors constant. The research finding indicated that the highest poverty incidence was observed in divorced households. The reason might be, as some scholars argue that as one is married the probability of falling into poverty decreases, as there will be more labor forces in the household (Maru, 2004; Metalign, 2005; Araya et al, 2011).

Agroecology: Households living in *Weyna-dega* have got a higher poverty incidence and a positive relationship with poverty and an inverse relation to *Wurch* agroecology (Keith, 2006). Further, a household living in *Weyna-dega* has a probability of falling into poverty by 21.5% and is significant at $P < 0.05$ as compared to *Dega* agroecology given other factors remaining constant. This might be due to differences in the quality of land, the amount and distribution of rainfall and population densities that influence between highlands and midlands. For example, climatologically lowland areas are warmer than high land areas. Thus, in this study *Weyna-dega* agroecology might be subject to moisture stress that could limit the productivity of crop, livestock, and other

allied livelihood activities than the *Dega* and *Wurch* agro-ecologies. This is similar to the findings of Wolde (2017).

Table 7. Output of the binary Logistic regression model

Variables	Coefficient	Marginal effects	p-value
HHHSex (male=0)	0.594	0.086	0.429
FSize	0.465	0.070	0.001***
HHHAge	0.038	0.006	0.147
Dratio	0.653	0.098	0.623
HHHmrst			
(married=2)	-1.621	-0.282	0.061*
(single=3)	-1.615	-0.281	0.068*
(widowed=4)	-2.834	-0.417	0.001***
Levedu (literate=1)	0.569	0.084	0.295
LSize	-0.864	0.130	0.297
TLU	-0.258	0.039	0.013**
Foodwr	-0.446	-0.069	0.437
Offfarmuse (yes=1)	-0.301	-0.044	0.565
Hsave	-0.000	-0.000	0.788
Accmktig (yes=1)	0.221	0.034	0.779
Accexten (yes=1)	-0.649	-0.103	0.385
Irruse (yes=1)	-0.086	-0.013	0.900
Agro-ecological			
(*Woina-dega*=2)	1.307	0.215	0.021**
(*Wurch*=3)	-0.929	-0.105	0.181
AssetV	0.000	$-9.38e^{-07}$	0.257
Constant	-3.034	-	0.064*
Sensitivity 31.71%	Specificity 91.15%	Counted R2 75.32%	

Source: model output

Note: *, ** and *** refer to 10%, 5% and 1% Significant levels respectively

Conclusion and Recommendations

This study found that 30.9% poverty incidence, 4.4% poverty gap, and 1% poverty severity gap were observed in the study area. For univariate analysis, simple descriptive statistics, such as mean, frequency distribution, and standard deviation, mode, the median was calculated. Furthermore, the result of the binary logistic regression model revealed that among the explanatory variables in the model, family size ($P < 0.01$ and agroecological location of the household head ($P < 0.05$) were found to be significant, and positively influence HHs" poverty status. Whereas, owning livestock unit ($P < 0.05$), and marital status of the HH head($P < 0.1$), were found to be significant and negatively influence HHs' poverty status.

Rural farm household poverty causes are highly diverse and multifaceted. Only with more appropriate policies that recognize understanding the importance of poverty features and trends would be possible for more people to make positive exits from

poverty risk through appropriate intervention design and strategy setting. We would like to recommend:

- Even though the headcount ratio, depth, and severity of poverty have shown variations based on the criteria employed, all confirm that poverty is a problem of major concern. Thus, the study showed that it is important to differentiate among the poor that attention needs to be paid to the poverty gap and poverty severity.
- Any attempt to intervene in the community needs to target specific geographic locations such that as lowlanders, Midlanders, or the highlanders, which could enhance and poverty intervention selection criterion. Thus, as the poverty incidence was higher in lowlanders, attention needs to be given for lowlanders in poverty reduction resource allocation and poverty intervention selection.
- Livestock's contribution to the household food requirement and total income is significant. Hence, the provision of adequate veterinary services, improved fodder supplies, the introduction of new livestock packages to the poor households on credit, introducing effective forage development program, provision of training for the livestock holders on how to improve their production and productivity, optimizing stocking and destocking of livestock could significantly reduce poverty.

We used monetary poverty indicator consumption as wellbeing measurement at a given point in time and is a static measure. Broadly speaking, while static measures are useful for giving a headline indicator of the current level of poverty and how they vary across the place, time, and groups, dynamic measures(panel data) are more useful in helping policymakers design intervention to tackle poverty effectively.

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Conflict of interests

The authors declare no conflict of interest.

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Annex 1. Food items selected to calculate poverty lines

s/n	Food items	Kcal/100 gram[1]	Consumption per adult per month in Kg/lt	Consumption per adult per day in Kg//lt	Kcal per adult per day	Kcal per adult per day needed to get 2200kcal	Mean price per kg/lt	Cost per day(Birr)	Food pov. Line per year(Birr)
1	wheat	357.4	3.827	0.128	364.173	455.923	18	2.304	840.96
2	barley	372.3	2.754	0.092	272.99	341.771	16.5	1.518	554.07
3	Teff	355.1	1.556	0.052	155.10	194.179	35	1.82	664.3
4	Sorghum	359.2	2.89	0.096	276.39	346.03	16.22	1.56	568.35
5	maize	375	1.453	0.048	145.07	181.625	10.71	0.51	187.64
6	beans	351.4	1.709	0.057	159.89	200.18	22.18	1.26	461.45
7	pea	355.3	1.202	0.04	113.71	142.357	29.89	1.19	436.394
8	tomato	71.3	1.875	0.063	35.59	44.563	13.94	0.878	320.55
9	onion	30.7	0.743	0.0248	6.07	7.6	18.6	0.46	168.37
10	potatoes	89.7	0.359	0.012	8.57	10.734	33.56	0.40	146.99
11	cabbege	23.7	0.532	0.018	3.36	4.203	8.75	0.16	57.49
12	pepper	360.1	0.553	0.0184	53.02	66.378	38.125	0.70	256.05
13	coffee	110.3	0.436	0.015	12.80	16.03	128.75	1.93	704.91
14	suger	385	0.253	0.01	25.93	32.468	45	0.45	164.25
15	salt	178	0.393	0.013	18.63	23.318	15	0.195	71.18
16	oil	896.4	0.418	0.014	99.76	124.894	95	1.33	485.45
17	milk	73.7	0.319	0.011	6.256	7.837	30	0.33	120.45
					1757.309	2200.09		17.01	6208.84

Source: Model output, 2020

7 *Note:* The kcal/ 100 gm value for each food item is obtained from (EHNRI, 2007)

FINANCIAL STABILITY OF ENTERPRISES IN SERBIAN AGRICULTURE, FISHING AND FORESTRY SECTOR

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ABSTRACT

The main aim of this research paper is to examine financial stability, including indebtedness, interest coverage, and profitability of enterprises in Serbian Agriculture, fishing, and forestry sector. The research was performed using the tools of accounting and financial analysis. Period from 2015 to 2019 was observed. Analysis was based on consolidated financial statements for all enterprises that belonged to the sector in mentioned period. Research results show that the enterprises managed to maintain acceptable level of long-term financial stability, while on the other hand, there was a more significant disturbance on the side of short-term financial stability. Solid performances were recorded in the field of interest coverage, but also indebtedness where those indicators met referent values in almost every observed year. In the field of profitability that was examined via ROA and ROE indicators, poor performance was recorded.

Introduction

The sector of Agriculture, fishing and forestry is also known as "Sector A". This sector of the economy is extremely complex and includes many activities such as growing crops and plantations, animal husbandry, forest exploitation, but also production of animal origin products on farms. Agriculture in the Republic of Serbia has economic, social, and political importance. Significance of agriculture can be observed through participation of employees in agriculture in total number of employees. Almost ¼ of employees are in agriculture (Kuzman et al., 2017). In the Republic of Serbia there is a disproportionate ration between a number of rural populations and their share in the creation of GDP, unlike the EU countries. Only 5% of the EU rural population participates with 15% in GDP of the Union, while in Serbia a larger number of rural populations takes part in the creation of GDP lower value (Mitrović et al., 2017). By the early 1980s Serbia had experienced significant growth in agricultural production which stagnated in the late 1980s and declined sharply in the 1990s (Bogdanov & Rodić, 2014). Period from 2000 to

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2008 was characterized by substantial annual fluctuations of agricultural production, but generally it is still lower than in pre-transitional period (Bogdanov & Vasiljević, 2011). The period after 2010 was marked by significant policy changes.

Serbia has a favorable geographical position, but also great potential when it comes to agriculture, forestry, and fishing, so this sector deserves a deeper analysis of financial performance. The analysis will be conducted based on consolidated financial statements (balance sheets and income statements) for all enterprises that made up the above-mentioned sector in period from 2015 to 2019. The main aim of this research is to show financial stability and profitability of enterprises in Serbian Agriculture, fishing, and forestry sector, but also to give recommendations on how to improve or maintain mentioned financial indicators in the coming period.

Materials and methods

The research sample includes all the enterprises that were classified in the *Agriculture, fishing, and forestry sector* (Sector A) on the territory of the Republic of Serbia in period from 2015 to 2019.

Table 1. Research sample

Category / Year	2015	2016	2017	2018	2019
Number of enterprises	3,460	3,673	3,756	3,939	3,932
Number of employees	33,472	32,244	32,023	32,330	31,247

Source: Authors' interpretation based on FSAB data

The research is based on the Annual Financial Statements Bulletins (FSAB) that are available on the Business Registers Agency official webpage. These Bulletins contain data related to financial statements of entities in real sector. Also, they include information related to number of entities and employees per sector. To be more precise, the financial analysis is performed via consolidated balance sheets and income statements for all enterprises that were classified in "Sector A". (*Table 1*.)

Table 2. Growth tendencies of Agriculture, fishing, and forestry sector

Category / Index	Ind. 2015/ 2014	Ind. 2016/ 2015	Ind. 2017/ 2016	Ind. 2018/ 2017	Ind. 2019/ 2018
Number of enterprises	101.4	106.2	102.3	104.9	99.8
Number of employees	97.4	96.3	99.3	101.0	96.7

Source: Authors' interpretation based on FSAB data

For the research to be conducted methodologically accurate and precise, it is necessary to set several starting points. Balance sheets have separately presented *Deferred tax assets* and *Deferred tax liabilities* positions. Therefore, position *Deferred tax assets* had to be associated with short-term or long-term assets, while balance sheet position *Deferred tax liabilities* had to be associated with either short-term or long-term liabilities. Deferred tax assets were treated as part of long-term assets, while deferred tax liabilities were treated as a component of long-term liabilities. *Subscribed capital unpaid* balance sheet item was abstracted from the analysis on the *Assets* side, but also from *Equity*. Off-balance sheet assets, off-balance sheet liabilities and loss above equity are also out of analysis scope.

The research was performed based on the following steps:

1. *Long-term financial stability analysis.* Long-term financial stability is present when long-term tied assets are equal to equity increased by long-term liabilities. (Rodić, et al., 2017). Examination of conditions for establishment and maintenance of long-term financial stability requires consideration of relationship between long-term liabilities and long-term tied assets. (Miljković, 2008). The analysis of the relationship between long-term assets and long-term liabilities will be performed using the Long-term ACID test.

2. *Short-term financial stability analysis.* Short-term financial stability is expressed through the liquidity of a company. It refers to the ability to pay due liabilities within maturity. Liquidity is a company's ability to raise cash in the short term to meet its obligations. Liquidity depends on a company's cash flows and the makeup of its current assets and current liabilities (Subramanyam & Wild, 2009). Determinants which affect liquidity are overdue liabilities, deadlines and means of payment (Vunjak, 2011). The analysis of the relationship between short-term tied assets and short-term liabilities will be performed using the Short-term ACID test.

3. *Indebtedness analysis.* Indebtedness is assessed through the liabilities structure. The more the structure of liabilities is shifted towards equity, the more favorable the ratio of assets and debts is, hence the lower the probability is that the debtor's losses will be higher than equity (Rodić, et. al, 2017). Indebtedness ratio is the measure used in analyzing financial statements to show the amount of collateral available to creditors (Nuryani & Sunarsi, 2020).

4. *Interest coverage analysis.* Interest coverage ratio measures the number of times a company's earnings could cover its interest payments. A higher interest coverage ratio indicates stronger solvency, offering greater assurance that the company can service its debt (i.e., bank debt, bonds, and notes) from operating earnings (Robinson, et. al, 2009). This ratio indicates the amount by which income from operations could decline before a default on interest may result (Dauderis and Annand, 2014).

5. *Profitability analysis*. Profitability of the concern purely depends on the effectiveness and proper utilization of funds by the business concern (Paramasivan & Subramanian, 2009). Profitability ratios are indicators of the overall efficiency (Kabajeh et al., 2012). The profitability ratios based on sales are profit margin and expenses or operating ratios. The profitability ratios related to investments include return on assets, return on capital employed, and return on shareholders' equity (Kulkarni and Mahajan, 2008). Profitability analysis of enterprises in Agriculture, fishing and forestry sector will be conducted using Return on assets (ROA) and Return on Equity (ROE) ratio indicators. ROA measures the ability to utilize assets in order to create profits, by comparing profits with the assets that generate those profits (Gibson, 2000). ROE of a company is affected by two factors: how profitably it employs its assets and how big the firm's asset base is relative to shareholders' investment (Palepu et al., 2000). ROE measures a firm's productivity of equity and therefore provides an indication of its ability to attract a form of capital that provides an important cushion for the debt holders (Fridson and Alvarez, 2002).

The main question that arises is how financially stable enterprises in Serbian Agriculture, fishing and forestry sector are, as well as whether the above-mentioned indicators strive towards improvement or deterioration. Following hypothesis are set:

H1: Enterprises in Serbian Agriculture, fishing and forestry sector manage to maintain acceptable level of long-term financial stability: the share of short-term sources of funds in the financing of long-term assets does not exceed 20% during observed period.

H2: Enterprises in Serbian Agriculture, fishing and forestry sector do not manage to maintain acceptable level of short-term financial stability: short-term liabilities maturity needs to be extended in average by 50% or more compared to the maturity of short-term tied assets in whole observed period to maintain liquidity.

H3: Indebtedness and interest coverage ratio indicators of enterprises in Serbian Agriculture, fishing and forestry sector have an improving tendency during observed period.

H4: Profitability ratio indicators (ROA and ROE) of enterprises in Serbian Agriculture, fishing and forestry sector have an improving tendency during observed period.

Results

Long-term tied assets, but also equity and long-term liabilities had increasing trend over observed period. During the timeline, the balance sheet position *Immovables, plants, and equipment* had the most significant growth within long-term tied assets category (up to 8%).

In recent years, long-term financial investments have grown significantly. Long-term stability coefficient was slowly decreasing during time as consequence of more rapid equity and long-term liabilities growth compared to long-term tied assets. (*Table 3*)

Table 3. Long-term financial stability analysis [balance sheet positions in KRSD[2]]

#	Category / Year	2015	2016	2017	2018	2019
1	Permanent assets	456,451,679	538,009,438	566,877,614	593,820,519	614,517,321
2	Inventories	92,555,989	95,698,975	103,430,194	104,895,695	106,650,261
3	Deferred tax assets	3,545,592	2,828,254	2,502,694	1,471,281	1,404,088
3	**Long-term tied assets [1+2]**	**552,553,260**	**636,536,667**	**672,810,502**	**700,187,495**	**722,571,670**
4	Long-term loans	74,346,741	81,695,739	87,439,004	108,465,296	118,553,466
5	Long-term provisions	6,270,796	6,627,205	6,630,765	4,797,176	3,871,526
6	Deferred tax liabilities	6,754,823	7,514,431	8,294,170	8,635,402	7,885,931
7	Equity	391,297,105	479,930,567	507,177,337	523,010,096	543,983,077
8	**Long-term sources of funds [4 to 6]**	**478,669,465**	**575,767,942**	**609,541,276**	**644,907,970**	**674,294,000**
9	**Long Term Financial Stability Coefficient [3/8]**	**1.1544**	**1.1055**	**1.1038**	**1.0857**	**1.0716**

Source: Authors' calculations

Long-term Financial Stability Coefficient was used for performing of ACID test as it follows. (*Table 4*)

Table 4. Long-term ACID test - calculation

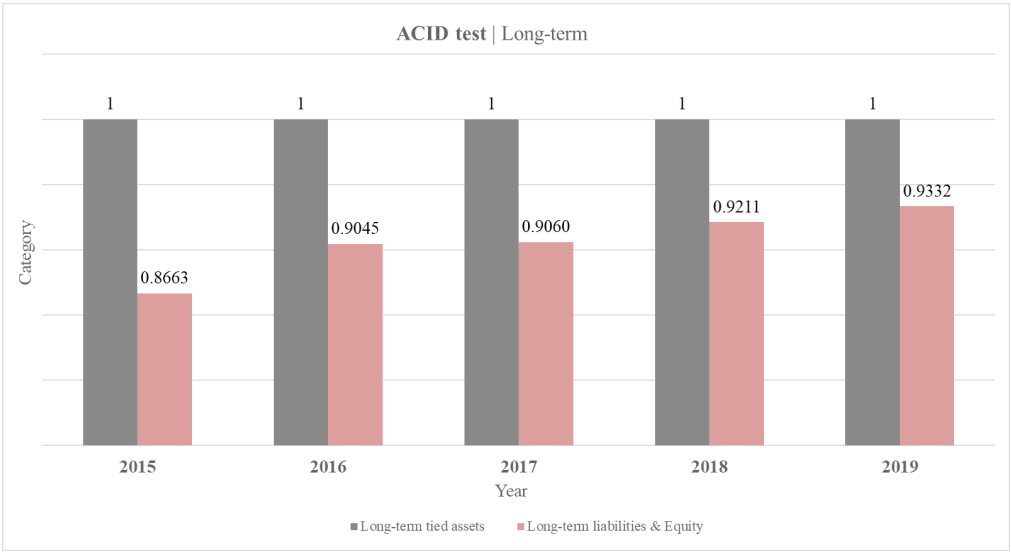
#	Category / Year	2015	2016	2017	2018	2019
1	Long-term tied assets	1	1	1	1	1
2	Long Term Stability Coefficient	1.1544	1.1055	1.1038	1.0857	1.0716
3	Long-term sources of funds [1/2]	0.8663	0.9045	0.9060	0.9211	0.9332

Source: Authors' calculations

Based on the results of the ACID test, it is concluded that the long-term financial balance is shifted to long-term tied assets.

2 Thousands (K) of Serbian dinars (RSD)

Figure 1. Long-term ACID test results – visual representation



Source: Author

The test results indicate following:

- Every 100 dinars of long-term assets were covered with 86.63 dinars of long-term sources of funds in year 2015. The difference of 13.37% [73,883,795 KRSD] was covered from short-term sources of funds.
- Every 100 dinars of long-term assets were covered with 90.45 dinars of long-term sources of funds in year 2016. The difference of 9.55% [60,768,725 KRSD] was covered from short-term sources of funds.
- Every 100 dinars of long-term assets were covered with 90.60 dinars of long-term sources of funds in year 2017. The difference of 9.40% [63,269,226 KRSD] was covered from short-term sources of funds.
- Every 100 dinars of long-term assets were covered with 92.11 dinars of long-term sources of funds in year 2018. The difference of 7.89% [55,279,525 KRSD] was covered from short-term sources of funds.
- Every 100 dinars of long-term assets were covered with 93.32 dinars of long-term sources of funds in year 2019. The difference of 6.68% [48,277,670 KRSD] was covered from short-term sources of funds.

The fact there is a part of long-term assets financed from short-term sources of funds have a negative impact on the company's liquidity, because short-term liabilities are due for payment before the release of long-term tied assets. In perfect conditions, where the release of short-term tied assets absolutely matches the maturity and value of short-term liabilities (1:1 ratio), difference between *Equity increased by long-term liabilities*

on the one hand and *long-term tied assets* on the other hand would be equal to cash and liquid reserve. The previously mentioned situation is very rare in practice.

Taking everything into account, it can be concluded that enterprises in Serbian Agriculture, fishing, and forestry sector managed to maintain a long-term financial stability, because less than 15% of long-term assets was financed form short-term sources of funds during whole observed timeline. In dynamics, it can be concluded that there is a trend of long-term financial stability improvement, where the percentage of financing long-term assets with short-term sources of funds decreases from about 13% in year 2015 to about 7% in year 2019. Main leader of fast long-term financial stability improvement was enormous growth of equity.

Short-term (current) assets recorded a growth trend until year 2016, and situation is the same with short-term (current) liabilities. (*Table 5*) After that period, they recorded a decline in dynamics. The main cause of the decline in the value of short-term assets in year 2017 is a significant decline in sales receivables (-5.3%). The main cause of the decline on the side of short-term liabilities is the balance sheet position "*Other current liabilities*" with a decrease of 17.7% compared to year 2016. Although a downward trend was recorded on both sides, short-term assets recorded a more intense decline rate, which affected the decline in the Short-term Financial Stability Coefficient until year 2017. From 2017 until the end of the observed period, the coefficient had a growing tendency, because of growth in current assets.

Table 5. Short-term financial stability analysis [balance sheet positions in KRSD]

#	Category/ Year	2015	2016	2017	2018	2019
1	Cash & Cash equivalents	13,117,100	15,224,538	16,781,781	17,745,429	20,235,823
2	Sales, Specific business & Other receivables	90,666,550	98,477,667	94,247,146	96,264,977	99,438,808
3	Short-term financial investments	21,218,491	20,502,126	20,198,745	22,344,498	21,988,308
4	VAT	2,998,314	3,305,528	4,133,230	4,219,895	3,955,125
5	Financial assets at fair value through P&L account	372,624	152,776	103,903	100,498	115,938
6	Accrued expenses	5,733,361	6,627,521	6,170,686	5,567,827	5,767,186
7	**Liquid & short-term tied assets [1 to 6]**	**134,106,440**	**144,290,156**	**141,635,491**	**146,243,124**	**151,501,188**
#	**Category/ Year**	**2015**	**2016**	**2017**	**2018**	**2019**
8	Current financial liabilities	78,513,745	84,053,299	84,344,801	80,221,476	90,024,780
9	Operating liabilities	122,390,050	118,261,818	120,727,023	124,736,209	118,198,325
10	Other current liabilities	30,247,296	30,538,830	25,123,777	23,996,903	15,421,802
11	Liabilities for VAT, other taxes, contributions, other duties and deferred expenses	10,365,830	11,807,105	11,629,143	13,328,219	12,559,668

#	Category/ Year	2015	2016	2017	2018	2019
12	Prepayments, deposits and guarantees	10,442,121	7,670,351	8,277,929	8,372,146	10,175,511
13	**Short-term sources of funds [8 to 12]**	**251,959,042**	**252,331,403**	**250,102,673**	**250,654,953**	**246,380,086**
12	**Short Term Financial Stability Coefficient [7/13]**	**0.5323**	**0.5718**	**0.5663**	**0.5834**	**0.6149**

Source: Authors' calculations

The biggest impact on short-term assets growth in year 2018 and 2019 had the increase of *Cash and Cash equivalents* (up to 14%) and increase of *Sales receivables* (up to 4.5%). Short-term stability coefficient was used for ACID test calculation as it follows. (*Table 6*.)

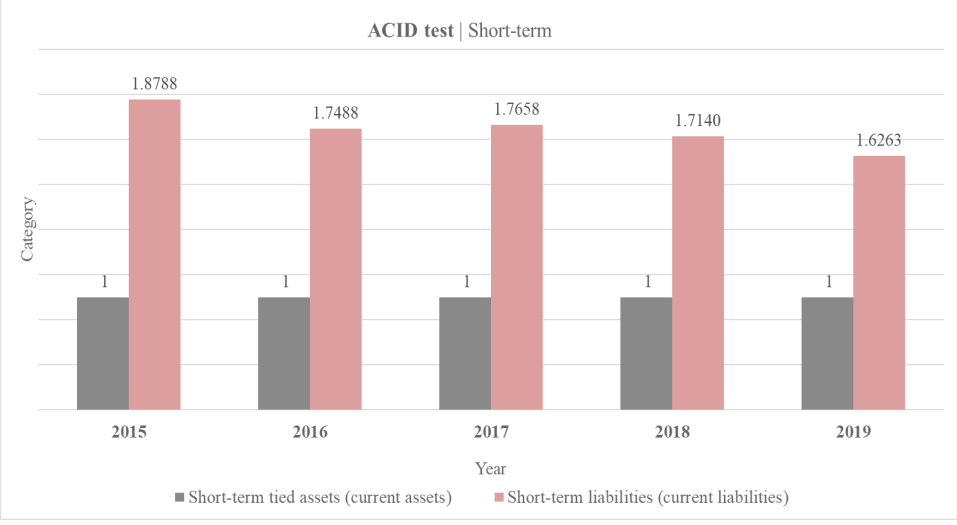
Table 6. Short-term ACID test - calculation

#	Category / Year	2015	2016	2017	2018	2019
1	Short-term tied assets	1	1	1	1	1
2	Short-term Stability Coefficient	0.5323	0.5718	0.5663	0.5834	0.6149
3	Short-term sources of funds [1/2]	1.8788	1.7488	1.7658	1.7140	1.6263

Source: Authors' calculations

Based on the results of the ACID test, it is concluded that the short-term financial balance was shifted to short-term liabilities in whole observed period.

Figure 2. Short-term ACID test results – visual representation



Source: Author

The test results indicate following:

- Every 100 dinars of short-term assets were covered with 187.88 dinars of short-term liabilities in year 2015. Maturity of short-term liabilities in this case should be longer than the maturity of short-term assets in average by 88% in order to maintain liquidity.
- Every 100 dinars of short-term assets were covered with 174.88 dinars of short-term liabilities in year 2016. Maturity of short-term liabilities in this case should be longer than the maturity of short-term assets in average by 75% in order to maintain liquidity.
- Every 100 dinars of short-term assets were covered with 176.58 dinars of short-term liabilities in year 2017. Maturity of short-term liabilities in this case should be longer than the maturity of short-term assets in average by 77% in order to maintain liquidity.
- Every 100 dinars of short-term assets were covered with 171.40 dinars of short-term liabilities in year 2018. Maturity of short-term liabilities in this case should be longer than the maturity of short-term assets in average by 71% in order to maintain liquidity.
- Every 100 dinars of short-term assets were covered with 162.63 dinars of short-term liabilities in year 2019. Maturity of short-term liabilities in this case should be longer than the maturity of short-term assets in average by 63% in order to maintain liquidity.

Short-term financial stability exists when ratio of short-term assets and short-term liabilities is 1:1. Observing the entire analyzed period, it is concluded that the enterprises did not manage to provide short-term financial stability, i.e. liquidity, because the balance was shifted towards short-term liabilities in every year. If the transition from year 2016 to year 2017 is omitted, it can be said that the enterprises are taking small steps to improve the situation related to short-term financial stability.

The next step of the analysis was to examine indebtedness. The indebtedness ratio is one of the most frequently used indicators of financial leverage. The rule applies to this ratio: the lower the value of the debt ratio, the greater the security of long-term creditors and the solvency of a company (Malinić et al., 2013).

Table 7. Indebtedness analysis [balance sheet positions in KRSD]

#	Category/ Year	2015	2016	2017	2018	2019
1	Total liabilities	339,331,402	348,168,778	352,466,612	372,552,827	376,691,009
2	Equity	391,297,105	479,930,567	507,177,337	523,010,096	543,983,077
3	Indebtedness Coefficient [1/2]	0.87	0.73	0.69	0.71	0.69

Source: Authors' calculations

When it comes to indebtedness analysis (*Table 7*), the most unfavorable ratio of liabilities to equity was recorded in 2015. In the period from 2015 to 2017, a decrease in the debt ratio was recorded, which is a consequence of the faster equity growth compared to total liabilities. The sharp rise in total liabilities led to a minor increase of the ratio in 2018 and thus disrupted the downward trend in indebtedness. If the minor growth of indebtedness in 2018 is abstracted, it can be said that the enterprises are reducing their indebtedness at low rates during observed period.

Table 8. Interest coverage ratio [Income statement positions in KRSD]

#	Category / Year	2015	2016	2017	2018	2019
1	Operating profit	9,159,312	20,709,974	11,813,064	9,228,603	10,107,337
2	Interest expenses	5,100,018	4,847,169	4,192,313	3,782,181	2,817,424
3	Interest cost coverage [1/2]	1.80	4.27	2.82	2.44	3.59

Source: Authors' calculations

Value of interest coverage ratio should be 2 or higher. Enterprises in Serbian Agriculture, fishing, and forestry sector managed to maintain this ratio above reference value from 2016 to 2019 (*Table 8*). Lowest interest coverage was recorded in year 2015 (1.80), and highest interest coverage was recorded in year 2016 (4.27). During observed period, interest expenses reduction trend was recorded. Variations in ratio were caused by unstable amounts of operating profit from year to year. Enormous growth of interest coverage in 2016 is a consequence of extreme operating profit growth in transition from 2015 to 2016. Operating profit growth in year 2016 was driven by increase of income from goods sold and services provided. Also, reduction of raw material costs, salaries, but also fuel and energy costs contributed to the outcome. It cannot be said that the enterprises managed to improve this ratio indicator from year to year during the observed period. After the growth from year 2015 to 2016, the ratio recorded a decline until 2019.

Table 9. Return on Assets [Balance sheet and income statement positions in KRSD]

#	Category / Year	2015	2016	2017	2018	2019
1	Operating profit	9,159,312	20,709,974	11,813,064	9,228,603	10,107,337
2	Total Assets	686,659,700	780,826,823	814,445,993	846,430,619	874,072,858
3	ROA [1/2]	1.33%	2.65%	1.45%	1.09%	1.16%

Source: Authors' calculations

The ROA indicator recorded a dynamic movement during the observed period. (*Table 9*) Significant growth from 2015 to 2016 is a consequence of far higher growth in operating profit compared to total assets. In 2016, the highest rate of this indicator was achieved. Until 2019, there was a decline in ROA because of the decline in operating profit, and enormous the growth of total assets. The largest contribution to the growth of total assets from 2015 to 2016 had *Immovables, plants & equipment*, with a growth of 7,133,045 KRSD, *Sales receivables* (+ 6.838.421 KRSD), *Inventories* (+2,902,747 KRSD), as well as *Cash and cash equivalents* (+ 2.243.886 KRSD). When it comes to

transition from 2016 to 2017, a huge decline of 4,403,077 KRSD in *Sales receivables* was recorded, but that decline was covered by growth of *Immovables, plants & equipment* (+26,269,635 KRSD), *Inventories* (+7,731,219 KRSD) and *Cash & cash equivalents* (+1,557,243 KRSD). Until the end of observed period, total assets growth was driven by growth of *Immovables, plants & equipment,* but also *Sales receivables* and *Inventories.*

Objectively, it cannot be said that the enterprises have a growing trend of ROA. Theorists agree with the statement that a good level of profitability is present when the ROA indicator is higher than 10% (Dakić & Mijić, 2020). Having in mind the above, the condition that theory finds as a reference value of profitability was not met.

Table 10. Return on Equity [Balance sheet and income statement positions in KRSD]

#	Category/Year	2015	2016	2017	2018	2019
1	Net profit	1,939,046	9,257,299	10,008,610	-1,750,212	6,184,712
2	Equity	391,297,105	479,930,567	507,177,337	523,010,096	543,983,077
3	ROE [1/2]	0.50%	1.93%	1.97%	N/A	1.14%

Source: Authors' calculations

The ROE indicator (*Table 10*) recorded a growth trend until year 2017, because of a higher net profit growth rate compared to equity growth. In 2018, the enterprises were operating at a loss and thus did not achieve a return on equity. After the loss, they recovered and achieved a return on equity of 1.14%. In whole observed period, the enterprises did not manage to reach ROE higher than 2% which is far below referent values of 10-15%. Considering the fact that in 2018 the enterprises operated with a loss, it can't be said that there is improving ROE trend during observed time. It is important to point out that in year 2019 the enterprises slowly started to recover with a net profit value of KRSD 6,184,712, which is a consequence of operating income growth and a significant reduction in operating expenses. The financial result was not driven by other, extraordinary, and accidental incomes.

Discussions

There is a strong correlation between long-term and short-term financial stability. The existence of stability on long-term side entails stability on the short-term side and *vice versa*. Enterprises in Serbian Agriculture, fishing and forestry sector can improve their financial stability by providing faster release of short-term tied assets compared to maturity of short-term liabilities. The possibility of implementing this recommendation generally depends on the position of products/services on the market, as well as the liquidity of customers. In addition, for the implementation of this recommendation, the possibility of suppliers to extend payment deadlines is of great importance.

Although there was a decline in indebtedness in the observed period, it is necessary to make additional effort in reducing the debt burden of equity, so that total debts do not exceed 50% of the equity value. To improve the position on interest coverage, it is

recommended to ensure greater financial independence. More precisely, it is necessary to ensure the growth of operating profit with less bank loans in following years. Ultimately, it is possible to achieve operating profit increase even with growth of bank loans, and thus interest expenses growth from year to year. In that case, the enterprises should act with a clear goal and plan to ensure the growth of operating profit at a higher rate in comparison to growth rate of interest expenses.

The prerequisite to achieve a higher ROA is ensuring a higher level of assets usage and making sure that assets are used with much greater efficiency. That is the only way to make assets contribute more to the growth of operating profit. Improvement of ROE is possible by profit margin increase. That can be done in various ways, such as adjustments (rising) of product prices, further reducing of employee related costs and COGS, as well as reducing other operating expenses.

Conclusions

Although there is financing of long-term assets with short-term sources of funds present in the observed period, it can be said that enterprises in Serbian Agriculture, fishing, and forestry sector do not have disturbed long-term financial stability, given that in the whole period less than 15% of short-term sources were used to finance long-term assets. Therefore, *hypothesis H1 is accepted as true* – Enterprises in Serbian Agriculture, fishing and forestry sector manage to maintain acceptable level of long-term financial stability during observed period. Given the fact that in overall observed period short-term liabilities maturity needs to be extended in average by 63% or more compared to the maturity of short-term assets, it can be said that short-term financial stability is disturbed. Therefore, *hypothesis H2 is accepted* – Enterprises in Serbian Agriculture, fishing and forestry sector do not manage to maintain acceptable level of short-term financial stability. Considering that no ratio (neither interest coverage, nor indebtedness) achieved pure growth trend from year to year in the entire observed period - *hypothesis H3 is rejected.* Although above mentioned ratios had a significant increase in several years, it was not perfect in terms of dynamics - there were many larger or smaller ups and downs in the values of indicators, especially when it comes to interest coverage indicator. The same applies to ROA and ROE, but these two indicators did not achieve a value even close to the reference value in any of the years covered by the analysis. *Hypothesis H4 is rejected.*

Conflict of interests

The author declares no conflict of interest.

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FORECASTING THE MAIN STRUCTURAL CHANGES IN AGRICULTURE OF THE REPUBLIC OF SERBIA

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ABSTRACT

Structural changes in agriculture, rural areas and regions, as well as in economic activities related to the production and trade of agricultural products, most often occur as a response to periodic changes in general economic and social conditions. In order to formulate effective policies and strategies, policy makers need adequate information about the main structural changes in agriculture. Therefore, based on the information framework of the Statistical Office of the Republic of Serbia, the article primarily focuses on changes of agricultural output in Serbia, respectively changes in crop and animal production, and agricultural services. The research aims to analyze changes in the structure of agricultural output in the period from 2007 to 2019 in order to identify its future trend by applying the forecast function. The research results show that the agricultural production of goods and services will keep the positive trend with a dominant share of crop production.

Introduction

Economic development of a country is mainly characterized by changes in the structure of economic activity. The varying development degree of economic sectors causes a change in their relative importance in the economy over time. Factors of these changes are complex and may include: changes in demand, introduction of new products and processes, different

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possibilities among sectors in terms of technological progress and substitution of factors, changes in the governmental role in carrying out an economic activity, changes in the pattern of international competitiveness, etc. (Kenneth et al., 1992).

The process of economic development mostly implies the reallocation of resources from agriculture to non-agricultural activities. While most economists agree that a structural transformation stems from productivity growth, there is no consensus of whether technological progress is more important in agriculture or industry. Bearing in mind the impassive, absolute significance of the agricultural sector in the economy, it is important to understand its key structural changes (Johnston, 1990) and their effect on the overall economy.

Structural changes have occurred in agriculture of Serbia for the last decades. In Serbia agricultural sector traditionally plays a crucial role in the national economy, acting as a backbone of economic development. It has a significant economic and social function in the society. The social aspect has been expressed for years, putting agriculture in the function of preserving the living standards of the population and reducing poverty. On the other hand, the economic role of agriculture is multiple. Although agriculture for decades has been only considered as the production of agricultural products, nowadays processing, marketing and distribution of crop and animal products are considered as an integral part of agriculture (Đekić et al., 2013). Agricultural products are largely represented in the trade balance of the country, primarily on exports, contributing to the economic development with a still significant participation in the national product of Serbia (Božić et al, 2020, Stanojević & Stanišić, 2015). In addition to providing food and raw materials for industry, agriculture in Serbia provides employment opportunities to rural population. This is especially important given that agriculture, in addition to providing livelihoods for farmers, contributes to alleviating high unemployment in rural areas, and in the entire economy (Halloran & Archer, 2008).

The paper focuses on structural changes in the agricultural production of goods and services as one of the main structural changes in agriculture. After examining the theoretical framework of the concept of structural changes and the role of agriculture in the national economy, structural changes in Serbian agriculture are elaborated from the aspect of agricultural output. Further, based on the trend function, future trend in crop and animal production and agricultural services has been forecasted. The aim of this research is to identify changes in agricultural output by analyzing its branches, but also to forecast a further course of their movements in a five years period.

Theoretical framework: The conceptual basis of structural changes in agriculture and its roles in the economy

Structural changes in production, but also the employment of individual sectors at the expense of other sectors during the development and growth process, were recognized as a feature of modern economic growth by economists Forast (1949) and Simon Kuznets (1956). Based on historical data from industrialized countries, both authors have noted a

development pattern reflected in a decline of the relative importance of agriculture, rapid industry growth and gradual increase in the importance of service sector in the economy (Raiser et al., 2003).

Early classical theory has described economic development as a process that leads to the systematic reallocation of production factors from the primary sector, characterized by low productivity, traditional technology and low income, to the modern industrial sector with high productivity rates and high income (Adelman, 1999). Agriculture has been considered as a traditional low productivity sector that passively contributes to development, providing food and employment. The significance of agriculture was expected to decline with a further development of economies (Kumar et al., 2019). Despite of this, agriculture is still considered necessary for development and economy transformation from traditional to modern (Konieczna & Konieczny, 2018).

Two basic agricultural characteristics in the early stages of development prove its role and place in economic development. First, agriculture produces products that directly meet basic human needs. Secondly, agricultural production combines the human knowledge, skills and work with natural resources. Given that natural resources are available and free, theorists of economic development initially believed that agriculture can develop independently of other economic activities. However, practice has shown that agricultural dependence on scarce surface of the country limits its progress, disabling the value of agricultural production to proportionally follow the growth of labour supply and technology. This is one of the reasons for diminishing returns in agriculture (Xinshen et al., 2007). On the other hand, the tendency to meet basic human needs and avoid stagnation in development implies that agriculture should ultimately develop at the same rate as the population.

The agricultural sector still has a strategic role in the process of economic development of a country. This sector has played a significant role and contributed greatly to the economic prosperity of developed countries, and its role in developing countries is still vital (Ark, 1995). The history of developed countries has shown a crucial contribution of the agricultural sector to the process of industrialization and overall economic development indicating that development of agricultural and industrial sectors are not alternatives, but complementary in the same process (Downes & Stoeckel, 2006). The fact that agriculture in most developing countries greatly contributes to the national product and still employs a large part of the workforce makes it unavoidable in discussions on the progress of the national economy (Gerdien & Pim, 2007). As the gross domestic product per capita is lower, the focus of economic development is on the primary sector of the economy. Nevertheless, the role of agriculture in economic growth and development has changed dramatically in the last decades (Xiahui, 2020).

Certain characteristics of agriculture as a primary sector determine its specific role in the economy and indicate a difference from other sectors (Gardner & Rausser, 2002). *First*, the primary sector is characterized by homogeneous products, which is one of the conditions for the absence of imperfect competition. One of reasons for greater flexibility in prices of agricultural product compared to the prices of industrial products is freely adjustment of

agricultural prices to the conditions of (almost) perfect competition. Although the influence on the determination of agricultural prices is possible through the cartel of the commodity market, various policies and state interventions, etc., it is less evident than for industrial products and prices.

The second important characteristic of the primary sector is foreseen in the seasonal and climate changes impact on the agricultural production. This results in seasonal fluctuations in prices, where even the insurance of such cases is usually not very helpful. Prices of primary products are affected by unpredictable factors, difficult to prevent and control.

The third characteristic of agricultural activities refers to the fact that in most countries they are carried out by a large part of the population (primarily in low-income countries). For that reason, the government strives to regulate the agricultural sector through agricultural policy. That is inspired by not only social reasons, but also by the need to protect the environment and prevent its endangering.

The fourth characteristic of the primary sector is reflected in the production that mainly relies on a non-productive factor of production - a land which is physically limited and whose productivity cannot be indefinitely increased. Although a modern agricultural technology and innovation can significantly contribute to overcoming this weakness, the land scarcity is still a major problem in most cases and significantly affects agricultural prices and the market (Gardner & Rausser, 2002).

Analyzing the role of agriculture in the national economy, the classics stated that the most developed countries have the so-called dual economy (Lewis, 1994) reflected in a lower labour productivity in agriculture compared to industry, which leads to a movement of workers from agriculture to non-agricultural sectors. It was considered that the non-agricultural innovation and technological changes are independent of agriculture, so agricultural workers and capital are needed in order to meet a demand for labour force and financial and capital investments in industry. This assumption supports the claim that agricultural and industrial revolutions always occur at the same time. Also, the economy in which agriculture stagnates, does not record the development of industry (Lewis, 1994). The claim of the classic that higher agricultural surpluses are necessary for financing industrial development are not relevant today, taking into account the liberalization of capital markets where investments in most countries still depend on domestic savings (Xinshen et al., 2007).

In addition to the role which agriculture has in securing labour and capital for industry, classics also emphasized its importance in food security leading to the sustainable economic development of the national economy. If traditional agriculture stagnates, employment growth in the non-agricultural sector would lead to food shortages. The increase in food prices would increase the cost of living, especially in lower income households that have a higher proportion of food costs in total costs. Pressure to increase salaries in the non-agricultural sector would threaten its growth, especially in the early stage of development when technology is dominantly labour intensive. This is known as the so-called Rickard's trap, which appears as a foundation of many economic theorists. Accordingly, successful

industrialization is not possible without a parallel effort to increase food production in order to avoid a danger of falling into the so-called Ricard's trap (Hayami & Godo, 2005).

Although economic development theorists observed the development of agriculture as an essential component and prerequisite for the development of the entire national economy, in the second half of the last century many countries tried to speed up the process of industrialization through over-taxation of agriculture. After that period prevailed the opinion that agriculture has not only a passive, but also an active role in economic development (Nikolić et al., 2010).

The transformation of traditional into modern agriculture has revealed its potential in terms of contribution to development. Scientific-based technology adapted to the ecological conditions of the country, becomes fundamental for the agricultural development. Advances in mechanical and biological technology helped to overcome shortcomings from the perspective of the land and workers (Langemejer & Boehlje, 2017). Successful agricultural innovations represent a process that reflects natural resources, the level of supply and demand for agricultural inputs and products, as well as the motivation of farmers, scientists, and in general private and public sector. Therefore, the growth of agricultural productivity implies a link between agriculture and non-agricultural sector. In other words, as originally claimed by the theoreticians, the agricultural development does not take place independently of non-agricultural sector (Xinshen et al., 2007).

The role of agriculture in the national economy has been modified due to the changes that have occurred compared to other sectors in the economy, as well as within agriculture itself (Xinshen et al., 2007). The relative importance of agriculture for the economic growth of a country has been reduced over time. This is reflected in a decreased share of agriculture in the gross domestic product in relation to industry and services sector (Lee, 1992). Further, the participation of the agricultural population in economically developed countries has been reduced. The reason for the redirection of the agricultural population in non-agricultural activities is due to the intensification of agricultural production and its productivity growth (Afsar & Hossain, 2020). On the other hand, the role of agriculture in providing food that meets essential needs of the population is irreplaceable, i.e. the absolute importance of agriculture remains unchanged. Moreover, its role in providing foodstuffs is expanding due to the need to produce increased amount of agricultural products under changing circumstances (population growth, increasingly scarce natural resources, changed climate, etc.). However, the agricultural production has undergone multiple changes in proportion between crop and animal production, as well as in a type of production that dominate (Gardner & Rausser, 2002).

Information base, research methods and research questions

The research aim of the study is to conduct a comprehensive research and analysis of structural changes in agricultural output, respectively in crop and animal production and agricultural services in Serbia.

Considering the aim of the research, this paper focuses on the following research questions:

a) Have structural changes in Serbian agriculture reflected reduction in the total value of agricultural output in the analyzed period?

b) Has the relative share of crop and animal production in total agricultural production of Serbia recorded any significant change in the analyzed period?

c) Based on the forecast of agricultural output, is there expected a further growth of crop and animal production, and agricultural services?

Research methods applied in the study are descriptive statistics and forecast trend. The forecast trend finds its application in determining the future movement of crop and animal production and agricultural services in Serbia. The Statistical Yearbook and Agricultural Economic Accounts of the Statistical Office of the Republic of Serbia in the period from 2007 to 2019 represent the information basis of this research.

Research results and discussion

Structural changes in the agricultural output of the Republic of Serbia

In the total value of agricultural production in Serbia traditionally dominates crop production due to the natural wealth and favorable climate for many different types of plants. The share of crop production is around two thirds of the total value, while animal production accounts for one-third. The share of agricultural services in total agricultural output, on the other hand, is only around 3 percentages.

The volume of agricultural production of goods and services of Serbia in the period from 2007 to 2019, as the analyzed period of this research, varies significantly, mainly due to adverse climate changes, but also given the other market fluctuations and influences. The absolute production values of agricultural goods and services in Serbia are expressed in producer prices of previous periods and represent the volume of production (*Table 1*).

The agricultural output has been increased almost twice in the observed period (from 330,174 mil. dinars in 2007 to 605,291 mil. dinars in 2019), even though the values fluctuated during this thirteen-year period. The most significant increase in agricultural output was recorded in 2008 compared to 2007 (27%). In the following years, both positive and negative volume growth changes have alternated, ending up with the overall rise in the agricultural output in 2019. The maximum value of agricultural output in general, but also in agricultural goods output and agricultural services, was achieved in 2019. Such movements are a result of large oscillations in the value of crop production since it accounts for two thirds of the total value of agricultural production and thus mostly affect the overall result. Given that the crop production reached its highest value in 2019, it was expected to have this kind of results for agricultural output as well. On the other hand, animal production achieved the highest values in 2014.

The highest growth in crop production was recorded in 2008 (28%) and 2010 (24%), and the remaining years recorded lower growth rate, and even negative (2009, 2012, 2015, 2017). While both crop and animal production recorded the biggest volume growth in 2008, animal production reached its pick in 2014 and ended up in 2019 with the value higher for 70% then in 2007. Agricultural services in the whole analyzed period from 2007 to 2019 record the value which is incomparably lower than value of agricultural goods output. Namely, the value of agricultural services is almost 40 times lower than the value of agricultural goods output in 2019. Even though the agricultural services record the highest value in 2019 (15,313 mil. dinars) which has been increased for 63% compared to 2007, the biggest increase in volume was recorded in 2008 (11%) and 2009 (12%), while negative volume changes occur in 2010 (-5%), 2011 (-2%), 2015 (-8%) and 2017 (-8%).

Table 1. Agricultural output at current producer prices in Serbia in the period 2007-2019, in mil. dinars

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Index*
Agricultural output	330,174	417,832	407,851	466,811	519,960	502,684	565,521	584,300	534,780	589,818	543,747	589,704	605,291	83.32
Agricultural goods output	320,756	407,406	396,221	455,753	509,125	491,597	552,079	569,276	520,966	574,818	529,890	574,704	589,978	83.93
Crop production[4]*	217,274	278,825	265,101	328,981	359,103	324,451	378,833	390,748	351,927	419,400	357,056	398,514	419,529	93.09
Cereals	90,749	134,575	110,384	146,733	175,221	138,325	174,602	178,776	139,584	164,832	113,760	157,004	158,829	75.02
Industrial crops	26,549	32,309	30,737	44,619	46,655	52,806	51,487	54,393	48,501	58,940	59,443	62,531	63,157	137.89
Forage plants	12,761	14,147	14,586	17,601	17,184	18,693	16,626	23,688	17,553	27,063	20,985	28,649	33,557	162.96
Vegetables and hortic. pr.	22,585	24,879	28,753	42,903	27,246	28,986	27,375	28,813	35,588	40,579	32,538	26,097	31,554	39.71
Tomato	8,318	8,314	9,747	17,695	17,870	12,342	19,102	13,025	13,642	13,892	11,687	13,218	11,805	41.92
Fruits	33,929	39,324	37,040	41,159	50,860	53,932	61,567	56,880	73,670	74,991	76,995	68,816	67,045	97.60
Wine	21,796	24,758	33,316	17,873	23,713	18,925	27,535	34,621	22,795	38,569	42,112	41,579	48,249	121.37
Other crop product	587	521	538	399	355	443	540	552	595	535	538	620	533	-9.28
Animal productions[5]**	103,482	128,581	131,119	126,772	150,022	167,146	173,246	178,528	169,038	155,418	172,834	176,190	175,450	69.55
Animals	69,001	87,759	95,853	89,606	102,774	113,463	118,893	123,133	111,012	104,281	120,478	114,530	121,969	76.76
Cattles	21,439	24,736	26,670	24,797	29,059	31,377	32,407	32,114	31,703	30,353	31,040	33,687	32,412	51.18
Pigs	32,955	46,734	51,192	45,392	48,768	58,642	60,983	65,765	57,098	54,272	66,199	57,503	63,583	92.94
Equines	129	118	105	61	61	377	203	151	77	367	383	36	320	148.37
Sheep and goats	6,524	6,771	7,363	8,516	9,315	7,801	8,121	10,108	8,971	5,998	8,416	8,299	10,612	62.66
Poultry	7,954	9,401	10,523	10,839	15,572	15,266	17,179	14,995	13,163	13,291	14,441	15,006	15,043	89.12
Other animals	34,482	40,822	35,266	37,166	47,248	53,684	54,353	55,396	58,026	51,137	52,356	61,660	53,481	55.10
Milk	25,352	30,397	25,480	26,943	34,212	36,777	38,018	38,459	37,310	35,048	35,388	44,261	37,192	46.70
Eggs	8,288	9,704	8,649	8,608	10,810	14,678	13,395	14,971	15,507	13,741	14,504	13,357	13,559	63.59
Other animal products	842	721	1,137	1,615	2,226	2,229	2,940	1,966	5,209	2,349	2,465	4,042	2,730	224.18
Agricultural services	9,418	10,426	11,630	11,058	10,834	11,087	13,443	15,024	13,814	15,000	13,856	15,001	15,313	62.59

Source: Statistical Office of the Republic of Serbia (c). (2009-2020). The Statistical Yearbook [4] [5]

*Index of agricultural output change in 2019 compared to 2007

4 * The value of crop production includes the production of cereals, industrial plants, fodder plants, vegetables and products of horticulture, fruit and other non-mentioned agricultural goods (Statistical Office of the Republic of Serbia (b), 2019)

5 ** The value of animal production includes the production/breeding of livestock, poultry and other animals and livestock goods. The production of livestock goods includes the production of milk, eggs and other non-mentioned agricultural goods (Statistical Office of the Republic of Serbia (b), 2019)

Table 2 shows the share of agricultural goods output and agricultural services in the total agricultural output in Serbia in the period 2007-2019, as well as a share of crop and animal production in agricultural output, including their branches.

Table 2. Agricultural output in Serbia for the period 2007-2019, in percentages

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Agricultural goods output	97	98	97	98	98	98	98	97	97	97	97	97	97
Crop production	66	67	65	70	69	65	67	67	66	71	66	68	68
Cereals	27	32	27	31	34	28	31	31	26	28	21	27	26
Industrial crops	8	8	8	10	9	11	9	9	9	10	11	11	10
Forage plants	4	3	4	4	3	4	3	4	3	5	4	5	6
Vegetables and hort. prod.	7	6	7	9	5	6	5	5	7	7	6	4	5
Tomato	37	33	34	41	66	43	70	45	38	34	36	51	37
Fruits	10	9	9	9	10	11	11	10	14	13	14	12	11
Wine	7	6	8	4	5	4	5	6	4	7	8	7	8
Other crop product	0	0	0	0	0	0	0	0	0	0	0	0	0
Animal productions	31	31	32	27	29	33	31	31	32	26	32	30	29
Animals	21	21	24	19	20	23	21	21	21	18	22	19	20
Cattles	6	6	7	5	6	6	6	5	6	5	6	6	5
Pigs	10	11	13	10	9	12	11	11	11	9	12	10	11
Equines	0	0	0	0	0	0	0	0	0	0	0	0	0
Sheep and goats	2	2	2	2	2	2	1	2	2	1	2	1	2
Poultry	2	2	3	2	3	3	3	3	2	2	3	3	2
Other animals	10	10	9	8	9	11	10	9	11	9	10	10	9
Milk	8	7	6	6	7	7	7	7	7	6	7	8	6
Eggs	3	2	2	2	2	3	2	3	3	2	3	2	2
Other animal products	0	0	0	0	0	0	1	0	1	0	0	1	0
Agricultural services	3	2	3	2	2	2	2	3	3	3	3	3	3

Source: Authors' calculation

In the structure of agricultural output of Serbia in the period 2007-2019 dominates agricultural production of goods with around 97-98% while agricultural services are included with only 2-3% in the whole analyzed period. Looking into the value of crop and animal production and their share in the total value of agricultural output, a dominant share has a crop production (around 67%), while animal production accounts on average of only 30%.

Within the crop production, the highest participation is mostly presented by tomato (around 40%), cereals (around 28%) and fruit (around 11%). The share below 10% within crop production is noticeable in industrial crops (9%), forage plants (4%), vegetables and products of horticulture (6%), wine (6%) and other crop products (0.1%).

In the value structure of animal production, the dominant share in agricultural output records animals (21%), pigs (10%) and other animals (10%), while all others under the animal production participate with less than 10% in agricultural output.

Agricultural production in Serbia is mainly intended for sale on the market, usually from agricultural holdings that includes sale to other agricultural holdings, entities outside agriculture and exports. On average for the observed period, sale from agricultural holdings accounted for 80% of total agricultural production. The consumption of agricultural goods within the units, and for the needs of various agricultural activities (for example, the use of crop products for animal nutrition purposes) ranged between 8.4% and 14.9% (Statistical Office of the Republic of Serbia (b), 2019).

Only a small part of the production of agricultural holdings is intended for own consumption, which in the observed period 2007-2019 was 6% on average. However, in some years this participation was lower. Thus, in 2018 amounted to 4.7% and in 2019 was 4.8% of the total value of agricultural production (Statistical Office of the Republic of Serbia (b), 2019).

Forecasting the movement of agricultural output in the Republic of Serbia

Estimating the future trends of key agricultural indicators is considered as a useful tool for stakeholders (farmers, agricultural enterprises, state institutions, etc.). Given the crucial role that food production has in providing a social security of citizens, the state has a special interest in predicting as accurately as possible further changes in agriculture.

The state usually performs forecasts of agriculture, but on the other hand also appears as the main user of the results. Although the forecasting cannot provide an exact information about the future, but only prediction and probabilities about the further trend in some indicators based on the historical data, it often supports the decision-making process. When drafting different forecasts and apply various methods, it is of a high importance to take into account indicators that will ensure easier implementation of policies, providing technical and market assistance to the agricultural sector (Sanders, 2000).

Figures 1-3 show the forecasted values of crop production, animal production and agricultural services in Serbia for the next five years. Exponential smoothing forecast method has been applied based on the historical values from the period 2007-2019 available in the publications of the Statistical Office of the Republic of Serbia. A confidence interval of 95% indicates the probability of 95% for future values to occur.

The future value (y) has been calculated based on the following formula for linear regression equation (Sanders, 2000):

$y = a + bx$

where:

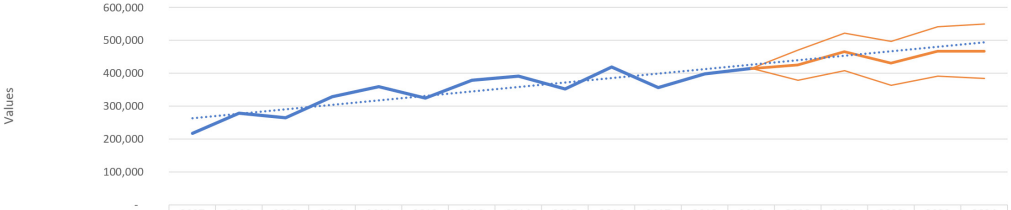
the *a* constant (intercept) is:

$$a = \bar{y} - b\bar{x}$$

the *b* coefficient (slope of the line) is:

$$b = \frac{\Sigma(x - \bar{x})(y - \bar{y})}{\Sigma(x - \bar{x})^2}$$

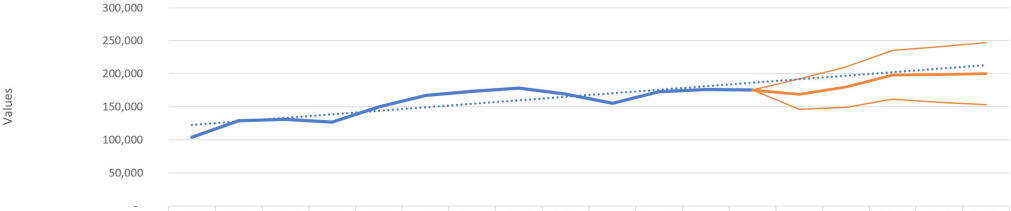
Figure 1. Forecast tendencies of values of crop production in Serbia



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Values	217,274	278,825	265,101	328,981	359,103	324,451	378,833	390,748	351,927	419,400	357,056	398,514	414,529					
Forecast													414,529	424,705	465,534	430,559	466,673	466,713
Lower Confidence Bound													414,529	379,075	408,441	363,924	391,680	384,186
Upper Confidence Bound													414,529	470,336	522,627	497,194	541,666	549,241

Source: Statistical Office of the Republic of Serbia & authors' calculations

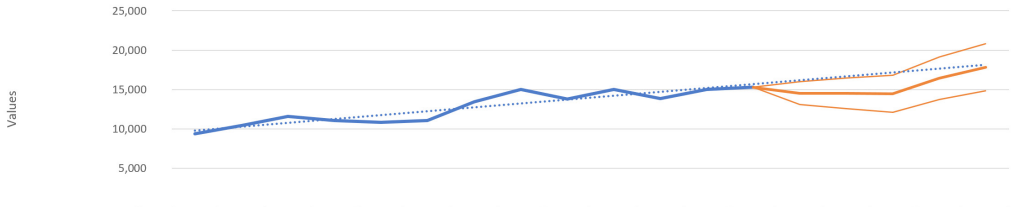
Figure 2. Forecast tendencies of values of animal production in Serbia



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Values	103,482	128,581	131,119	126,772	150,022	167,146	173,246	178,528	169,038	155,418	172,834	176,190	175,450					
Forecast													175,450	169,045	179,840	198,330	198,844	200,002
Lower Confidence Bound													175,450	146,250	149,158	161,395	156,560	152,964
Upper Confidence Bound													175,450	191,840	210,523	235,265	241,127	247,040

Source: Statistical Office of the Republic of Serbia & authors' calculations

Figure 3. Forecast tendencies of values of agricultural services in Serbia



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Values	9,418	10,426	11,630	11,058	10,834	11,087	13,443	15,024	13,814	15,000	13,856	15,001	15,313					
Forecast													15,313	14,564	14,520	14,492	16,458	17,836
Lower Confidence Bound													15,313	13,112	12,566	12,139	13,764	14,839
Upper Confidence Bound													15,313	16,016	16,475	16,845	19,151	20,832

Source: Statistical Office of the Republic of Serbia & authors' calculations

The figures 1, 2 and 3 show both historical, respectively realized values of crop and animal production and agricultural services, as well as the forecasted values for the next five years based on the historical data from 2007 to 2019. The forecasted values are ranged between the lower and upper limits of reliability, providing information about the interval for the future values to appear. Along with the historical and forecasted values, in all three figures are provided trends aiming to ensure easier observation of movements. Based on the forecast shown in Figures 1-3, crop production, animal production and agricultural services in Serbia have a tendency of further growth in the next five years.

Conclusion

Agriculture in Serbia faces many challenges that caused different changes in its structure. The key challenge faced by agricultural and economic policy makers of Serbia is how to ensure a sustainable agricultural development process that will respond to the challenges of developed modern technology and increased demand in the market. Therefore, it is extremely important to ensure productivity growth, strengthen the agricultural market, stimulate investment, invest in research and development, improve links between agriculture and non-agricultural sector in rural areas, invest in human resources, encourage key branches of crop and animal production, and ensure regional cooperation of stakeholders. Although small and medium-sized agricultural holdings constitute almost the total number of agricultural holdings in Serbia, agriculture in the future should rely on large agricultural holdings specialized in certain agricultural production. This trend can be partly attributed to technical innovations, economies of scale, increased consolidation in food processing, and distribution and sales.

In addition to meeting the need for quality, diversified and food in sufficient quantities, agriculture is expected to contribute to overall economic development and poverty reduction, to face increased competition for alternative uses of scarce land and water resources, to adapt to climate changes and contributes to the conservation of biodiversity and the restoration of sensitive ecosystems, etc. However, one of the challenges that agriculture will be exposed in the coming period is the sustainable production of food. Climate changes will bring higher average temperatures, changes in precipitation, more frequent extreme phenomena, numerous threats to sustainable food security. In order to meet these challenges, a coordinated action of the private and public sector and civil society is needed, which will have to be adapted to specific circumstances.

Given the research results of this study reflected in the forecasted further positive trend in crop and animal production and agricultural services, it is expected that agriculture can meet the future needs, even though there is a room for potential improvement in the field of more intensive development of animal production, diverse crop production and various agricultural services.

Conflict of interests

The authors declare no conflict of interest.

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THE ROLE OF REWARD-BASED CROWDFUNDING IN FARM FINANCING: WHAT CHARACTERISES SUCCESSFUL CAMPAIGN?

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ABSTRACT

The purpose of this paper is to provide insight into the role of reward-based crowdfunding in farm financing, with a focus on its likelihood of success. The study uses a sample of 1,566 projects from the Kickstarter platform between 2014 and 2020. We added the level of urbanisation and relative importance of agriculture in the country's economy to the basic elements to assess the importance of the crowdfunding.

We run a logistic regression model to investigate factors that motivate investment decisions. We discovered a statistically significant negative correlation between the self-set campaign goal and project success, as well as a small positive impact of number of backers and a positive impact of the importance of agriculture in the country's economy on crowdfunding success. In an era of rapid innovation and the rise of social networks, this paper contributes to the current literature on the agri-food industry's reword-based crowdfunding approach.

Introduction

As an industry that impacts and influences other economic sectors, agri-business becomes part of a more extensive socio-economic system that creates a universal solution for food availability and quality. Agri-business value chain consists of different subjects from primary agricultural production to the processing and distribution of food products (Njegomir et al., 2017). As those agri-systems have become more integrated, and complex (Zakić et al., 2014), access to finance became increasingly important to

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ensure investment in production, land quality, stable cash flows, improved market access and risk management. The development of higher production outputs and financial outcomes is hampered by a persistent lack of capital in the agricultural production phase (before harvest). (Popović et al., 2018; Kovačević et al., 2018). Because agriculture is characterised by a certain level of unpredictability, financial institutions are hesitant to take production risks associated with natural disasters and other agri-business concerns (IISD, 2015).

Mollick (2014) defines crowdfunding as "the efforts by entrepreneurial individuals and groups—cultural, social, and for-profit - to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries".

According to Pronti and Pagliarino (2018), open innovations (OI) is a concept that can boost the agri-business. Cillo et al. (2018) consider OI as the new paradigm that can "collect ideas from an external environment capable of triggering innovation processes, which can then increase businesses competitiveness". A recent example of improvement of productivity and sustainability in the agri-business is application of crowdfunding by OI combined with "collective intelligence" (O'Reilly, 2007)

The basic elements of every crowdfunding campaign are a project creator, the backers or investors in the idea, the crowdfunding platform, the campaign itself, and the crowdfunding outcomes - succeed or failed (Petruzzelli et al., 2019). The project initiator - someone seeking funds, the investors - a group of people offering to finance, and the platform as an intermediary between the project initiator and the project financier are the basic elements of crowdfunding in practise (Kuti, 2014; Renwick and Mossialos, 2017).

Moritz and Block (2016) point out that crowdfunding refers to raising financial sources from the capital providers or the "crowd" which has created a new paradigm in terms of overcoming bureaucratic obstacles and creating new industries (Fink, 2012). In that aspect, the aim of this paper is to provide insight into the role of farm reward-based crowdfunding, as agri-food crowdfunding can connect agricultural producers and users and deliver products directly to the consumers, particulary in the urban area (Li et al., 2020; Yu and Rehman Khan, 2021). Also, it can create trust among parties involved in agri-business crowdfunding for agricultural products do not have certainty in production. Shifting from the challenging bank financing to the funding from a considerable number of investors in small percentages, which crowdfunding enables, can be more convenient. In that aspect, we focus on the likelihood of success of this type of financing.

Literature review

The extensive usage of crowdfunding has been attributed to the commercialisation of the Internet caused by the decreased online search costs, reduced risk exposure and low communication costs, (Agrawal et al., 2014). As pointed by Martinez-Climent et al.

(2018), it is "a materialisation of the evolution of entrepreneurial finance". In contrast to traditional finance, crowdsourcing allows businesses to raise financing directly from ordinary investors, bypassing conventional financial institutions, business angels, and venture capitalists. Although it is not the sole method to gather funds using the Internet, crowdfunding became an "umbrella" term for other online funding methods, making it one of the most accessible and successful financial vehicles.

Various agri-business aspects have been highlighted in academic literature. Cillo et al. (2018) emphasised the importance of knowledge management capabilities in agri-business crowdfunding in terms to "collect, systematise, categorise and filter the information they receive from external sources" which means that crowdfunding in the agri-business can help producers be more creative and have an innovative response towards competition (Franceschelli et al., 2018), but also expands the possibilities for making farming smarter (Xiong et al., 2020; Miletić et al., 2020; Živković et al., 2019; Tošović - Stevanović et al., 2020).

In practice, it is a compelling way to finance projects (Hommerova, 2020) that provides value□added involvement (Macht and Weatherston, 2014) and include marketing benefits beyond the collected funds (Belleflamme et al., 2014; Mollick and Kuppuswamy, 2014). Crowdfunding involves highly educated individuals (Bernardino and Freitas Santos, 2020) and gives the possibility to gain necessary funds in projects early stage. Many online crowdfunding platforms serve as intermediaries between start-ups and investors. Official statistic from Kickstarter webpage shows that since it has been launched in April 2009 up to the mid-May 2021, 20 million people invested in projects, $5.8 billion has been pledged, and 201,475 projects have been successfully funded. According to the report "Crowdfunding Market - Growth, Trends, and Forecasts (2020-2025)", it is expected that the crowdfunding market will grow at a compound annual growth rate (CAGR) of over 16% during the period 2020-2025.

As previously noted, agricultural financing options are limited. Crowdfunding, on the other hand, offers a lot of potential for overcoming these barriers and triggering financing through agribusiness innovation processes. Also, it can bring the possibility of creating trustworthy in food supply chains (Xiong et al., 2020) and raise the importance of food sustainability (Yu and Rehman Khan, 2021). Crowdfunding can be divided into different forms: reward-based, donation-based, lending-based, and equity-based (Stanko and Henard, 2016; Vismara, 2019). The main difference is based on a goal that wants to be achieved (Mollick, 2014). According to Lehner (2013), donation-based crowdfunding is similar to social entrepreneurship, whereas the other three can be classified as traditional venture capital (Mollick, 2014). Li and Du (2020) note that agri-food crowdfunding can be considered as a form of reward-based finance. De Larrea et al. (2019) point out the additional factors of the success in the case of reward-based crowdfunding are: emphasising the community benefits, updating the crowdfunded project, and actively responding to project funders' comments.

This is essential in the context of agri-crowdfunding because reward-based crowdfunding is a two-sided market (Tomczak and Brem 2013), with funders acting as early customers (Mollick, 2014) who evaluate the products and receive a reward for backing a project. The type of reward might range from simple thank-you letters to unique services, as well as certain material compensations. (Gerber et al., 2012; Zhao and Ryu, 2020). It's worth noting that the number of incentives can have an impact on the success rate (Lin et al., 2016).

Li et al. (2020) observed the issue of prospect theory, also called a theory of choice, including a behavioural model where people choose between alternatives that involve risk and uncertainty. Based on this theory, Li et al. (2020) note that backers in the agri-food campaigns do not make rational decisions. This could be explained by the fact that the agri-business is highly seasonal, and several problems could occur, such as product storage and eventually access to fresh food. In that aspect, the authors note that the "crowd" in the agri-business campaigns is more similar to online shoppers. Product, person, service, and image value, together with monetary cost, drives a rapid achievement of a funding target in agri-business crowdfunding campaigns (Li and Du, 2020).

We are focusing on an under-researched area of farming by exposing the factors impacting the success of crowdfunding campaigns, keeping in mind the various research focus of crowdfunding discovered thus far. In this paper, our attention is on analysing basic factors already identified in the academic literature, as well novel, particular ones discovered in our research.

Materials and methods

This study uses a reward-based crowdfunding campaigns dataset from Kickstarter, the most popular and one of the oldest crowdfunding platforms. Kickstarter is an "all or nothing" model of platforms, where the entrepreneur keeps nothing unless the goal is achieved, opposite to the "keep it all" model where the creator keeps any funds raised regardless of whether the goal is achieved (Cumming et al., 2019). We used a scraper robot that crawls projects from the Kickstarter webpage (kickstarter.com, last entry 5 February 2021) and collects data for each campaign. Thus, we have gathered over 200.000 campaigns in all categories from Kickstarter, covering the period from 2014 to 2020.

Because farming-related crowdfunding campaigns are of particular interest to us, we limited the sample to Kickstarter's Food category. All other categories (art, comics, dance, design, fashion, film and video, games, music, photography, publishing, technology, and theatre) were excluded from the research. The category Food has numerous subcategories not related to farming, such as drinks, restaurants, cookbooks, or processed Food. We limited our research only to subcategories Farms and Community Gardens, all other subcategories being excluded since we wanted to analyse factors affecting only campaigns related to the farming. This way, we have attained an adequate sample for the analysis. Before performing the analysis, we further applied several

filters. We excluded all active, cancelled, and suspended projects since we could not know their outcome. Active projects were ongoing at the moment of our analysis; cancelled projects were terminated by the creator before the end of the duration, while suspended were ended for violating some of the platform rules.

In line with existing literature (Mollick, 2014; Calic and Mosakowski, 2016; Cumming et al., 2017; Liang et al., 2020 and Ni et al., 2021), we have reduced the initial sample and left out campaigns of too small and too big values. On the contrary to the contemporary authors who most often use thresholds from $1.000 to $1.000.000, we excluded project below $500 and above the 99-percentile of the distribution, which was in the case of our sample value of over $500,000. We have lowered the threshold value because projects in the subcategories Farms and Community Garden have, on average, lower campaign goal than their counterparties from other categories. Projects with extreme values may have different characteristics from most projects (Liang *et al*., 2020). Campaigns with a small goal frequently lack real aim and, as a result, lack the project's necessary complexity. They may target family and friends (Cumming et al., 2017) or usually want free advertisement (Gerber et al., 2012; Mollick, 2014). Projects with extremely high values set as a goal are usually not suited for crowdfunding financing and should focus on more established or traditional sources such as venture capitalist, angel investors and financial institutions.

Thus, we have finalized our sample with 1.567 campaigns on Kickstarter in the period 2014-2020 in the subcategories Farms and Community Garden. Typical projects include the development of Aquaponic Farm, building organic farms, offering Garden Boxes with a set of fruit or vegetables, developing fertilizers or breeding healthy micro-organisms for fertilising, locally grown products such as perishable fresh foods such as vegetables, aquatic products, eggs, and meat.

Using a scraper robot for crawling projects from the Kickstarter webpage, we have received information about major attributes of every single campaign: campaign ID, an ID of the creator, a short, concise, effective introduction and description of the campaign, so-called blurb, goal of the campaign ($), blurb length, currency, time of launching the campaign, duration of the campaign, number of backers, the status of the campaign (active, succeeded, suspended, cancelled, or failed), pledged funds ($), category and subcategory, city and country of the creator. We added features linked to urbanisation to this data set, defining campaigns as being started in rural areas, towns, or cities, to see if there was a link between the effectiveness of farming efforts and the number of people living in the community. We used the Degree of Urbanization defined by the UN Statistical Commission and created a variable taking the value 2 if the campaign was initiated in settlement with more than 50.000 people, marking it as a city. Towns and semi-dense areas are coded as 1 with a population of at least 5,000 inhabitants (up to 50.000), while rural areas were marked with zero, with a population below 5.000. We did not use density grid cells in our classification.

To capture the relative importance of agriculture in the country's economy regarding generating national income, we used data from the World Bank (World Development Indicators) for the indicator "agriculture, value added (% of GDP)" that includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production.

In line with similar studies on crowdfunding performance, we used crowdfunding *success* as a dependent variable. The dummy variable success is a dichotomous variable, taking the value 1 if the campaign goal was achieved, i.e., if the campaign was successful, or zero elsewise, meaning that the campaign is treated as failed. We derived multiple variables of the project characteristic from the Kickstarter: project goal, duration of the funding period, number of backers, complexity, extended them with data on urbanisation and the level of agriculture to GDP, and tested them against the success of the campaign.

As in several previous research (Mitra and Gilbert, 2014; Beier and Wagner, 2015; Calic and Mosakowski, 2016; Butticè et al., 2017; Colombo et al., 2015; de Larrea et al., 2019; Butticè, et al., 2019; Ni et al., 2021), the project goal is identified as one of the major factors of success. Kickstarter is an open platform to funders worldwide, without the upper limit in setting the goal - creators on their initiative asset the amount of funds they want to attract during the campaign. Similar projects can have different funding goals; however, it is advisable to be realistic when setting the target values. We expect that higher target values will be less likely to reach. Therefore, higher target values decrease the chance of project success. Due to the high skewness of the distribution data related to the target value, we used the logarithm of the target capital (*log_target*).

Kickstarter projects can last from 1 to 60 days. The duration of the project campaign is the period in which the campaign is active. According to Mollick (2014); Hörisch (2015); Cumming et al. (2017); Butticè et al. (2019); Liang et al. (2020); Ni et al. (2021), it can be expected for shorter campaign *duration* to have the higher chances for success. It is important to achieve crowdfunding targets quickly, in shortest duration possible, since it has positive effects on raising sufficient funds and meeting the specific and personalised needs of the consumers and deliver it on time (Li and Du, 2020).

Backers are investors who pledge money in the project idea to join creators in completing the project through the creative process. They are crucial as they create word of mouth awareness (Stanko and Henard, 2017). As in Cumming et al., 2017; Stanko and Henard, 2017; Wang et al., 2017; Vismara, 2019; Hörisch and Tenner (2020), we included the *number_of_backers* into our model. We can expect that the number of backers attracted to the campaign has a positive relationship with the success.

There are several approaches for measuring the complexity of a project. In this paper, we followed Mitra and Gilbert (2014) and Wang et al. (2017) and used the *blurb_lenght* as the number of letters counted in the project short description. An analysis of the number of words and phrases in the project blurb suggested that more persuasive phrases can attract more project backers (Mitra and Gilbert, 2014), where an accurate description of a project through the blurb would likely have an impact on attracting more backers.

We derived two additional variables: level of urbanisation and the importance of agriculture relative to the country's economy. As in rural areas, agriculture represents the predominant land use and a major driving force of rural areas livelihood, we assumed that the level of *urbanisation* can be one of the success factors. Thus, we tested the odds in our model. The importance of the agricultural sector in the country depends on numerous conditions and varies among countries. In this case, we used the relation of agriculture in GDP (*agri_to_GDP*).

The descriptive statistics of the linked sample used in this research are shown in Table 1. The percentage of successful projects in the subcategories Farms and Community Gardens is 24.3% which is slightly below the statistic related to the Food category (25.64% as of May 2021) on the Kickstarter platform. However, if we compare the success of campaigns in the category Food to the success of all campaign that was 38.73% (data as of May 2021), we can conclude that Kickstarter campaigns related to Food attract less attention. During the considered time window, the average funding goal was $32,620.8, while the average amount pledged was more than seven-time smaller and amounted to $4.177.32. In both variables, the standard deviation is high, pointing to the high dispersion in the sample. Farming campaigns are characterised by average duration of 35.5 days and the number of backers slightly higher than 38. More than half of the creators of the campaigns are from rural areas (52.2%), followed by town (29.5%) and city residents (18.3%). The vast majority of the campaigns in the sample began between 2014 and 2015.

Table 1. Descriptive statistic of sample

Characteristic	**Sample**			
No. of projects	1566			
Successful projects (%)	380 (24.3)			
	Minimum	**Maximum**	**Mean**	**Std. Deviation**
Goal for collecting	500	500,000	32,620.8	63,773.38
Amount pledged	0	155,284	4.177.32	11,959.25
Duration	5	90	35.5	12.57
Backers	0	1,499	38.02	95.977
Blurb Length	8	148	115.04	25.854
Level of urbanisation	*Number of campaigns (% of campaigns)*			
City	286 (18.3%)			
Town	462 (29.5%)			
Rural	818 (52.2%)			
Year	*Number of campaigns (% of campaigns)*			
2014	358 (22.9%)			
2015	447 (28.5%)			
2016	243 (15.5%)			
2017	181 (11.6%)			
2018	130(8.3%)			
2019	130 (8.3%)			
2020	77 (4.9%)			

Source: Authors

Results

Since our dependent variable *success* is a dichotomous variable taking a value of either 1 (succeeded) or 0 (failed) we run a logit estimates as in previous research (Mollick, 2014; Hörisch, 2015; Hörisch, 2018; Butticè et al., 2019; Song et al., 2019; Liang et al., 2020).

$$P1(Y_i = 1) = \frac{1}{1+e^{-(\alpha+\beta_1 X_{1i}+\beta_2 X_{2i}+\beta_3 X_{3i}+\beta_4 X_{4i}+\beta_5 X_{5i}+\beta_6 X_{6i})}},$$

Where:

$X_{1=}$ *log_target*

$X_{2=}$ *campaign_duration*

$X_{3=}$ *number_of_backers*

$X_{4=}$ *blurb_lenght*

$X_{5=}$ *urbanization*

$X_{6=}$ *agri_to_GDP*

As this research aimed to estimate variable that have the odds to contribute to the farm crowdfunding, we presented the results of our probit estimation in Table 2. The model is statically significant ($p < 0.01$) and explains the relevant share of the variation of the dependent variable (Pseudo R2 Nagelkerke R Square 0.795). We found a statistically significant relationship for three out of six chosen variables, including project goal, number of backers and the relative importance of agriculture in the country's economy. As expected, the project goal has a negative, statistically significant regression coefficient (-3.64). We interpret this as each increase in the value of project goal decreases the odds of campaign success. This is the single, most important variable in the model with the highest correlation coefficient and with the greatest impact in the model. To be more specific, setting the project goal has the highest relation to success, where projects with lower funding values set as a goal have a greater chance of reaching the target and being successfully funded. The number of backers is positively related to the campaign's success (0.09), where more investors increase the odds of campaign success. However, small coefficients point out to relatively small influence.

The share of agriculture, forestry, and fishing in GDP has a negative, statistically significant regression coefficient (-0.709), indicating that lower values of this variable show better odds for the success of the campaigns related to farming. In other words, countries with relatively lower importance of agriculture in the country's economy have the greater odds for success of farming-related campaigns. Other variables in the model are not statistically significant.

Duration has a small negative coefficient, indicating that the longer the campaign is, the odds for success are lower. Also, the length of the project description (*blurb_lenght*) is

not significant with a small value of the correlation coefficient. The results related to the level of urbanisation show that the odds of successful farming campaigns increase with the higher level of urbanisation. Although not statistically significant, the odds of success are the highest if the campaign is initiated in the city, followed by town. The results are compared to a rural settlement category as a baseline.

Table 2. Binary logistic results

Model summary	**Model 1**
Dependent variable	**Funding Success**
Pseudo R^2 (Nagelkerke R Square)	0.795
Significance of the model	0.000
Parametric rating	
log_target	-3.643***
	(0.299)
number_of_backers	0.088***
	(0.006)
campaign_duration	-0.015
	(0.009)
blurb_lenght	-0.004
	(0,004)
urbanization = rural	0[a]
	/
urbanization = town	0.257
	(0.250)
urbanization = city	0.454
	(0.306)
agri_to_GDP	-0.709***
	(0.364)
Constant	10.939***
	1.176

a. Set to zero because this parameter is redundant.

Standard errors are in parentheses and *** Significance level: 0.01.

Discussions

This research contributes to the existing literature on the empirical analysis of the Kickstarter campaigns, with a focus on crowdfunding farming projects. The academic literature on crowdfunding is extensive, with several research directions available. However, research focused on agri-business are scarce and appeared recently. In this article, we attempted to evaluate characteristics that increase the possibility of meeting self-imposed goals. In line with mainstream research papers on crowdfunding, we found a statistically significant negative correlation between the self-set campaign goal and project success. Even at first glance, this is expected since the higher the amount of funds required to be raised, the lower the chances of success are. Our finding on a sample of farming-related crowdfunding campaign coincides with general research

related to crowdfunding from Mitra and Gilbert (2014), Beier and Wagner (2015); Calic and Mosakowski (2016); Butticè et al. (2017); Colombo et al. (2015); de Larrea et al. (2019), Butticè, et al. (2019), who all found a strong negative relationship between these variables. The results are also consistent with similar research on agri-food from Li et al. (2020); Ni et al. (2021). Both studies found that the project goal is highly relative in agri-food crowdfunding campaigns.

In line with Cumming et al. (2017); Stanko and Henard (2017); Wang et al. (2018); Vismara (2019); Hörisch and Tenner (2020), we also found that the number of backers has a positive impact on crowdfunding success. The difference between our finding and those of mentioned authors are in the value of the regression coefficient, that is to the level of the importance of the number of backers. While we found a relatively week connection, the other author found number of backers to be a more important predictor of success. We can explain this as follows. The goal amounts in the farming campaigns are relatively smaller compared to all categories of crowdfunding campaigns on Kickstarter, and thus a smaller number of backers can achieve the funding goal. Also, as Li et al. (2020), concluded the backers of agri-food crowdfunding are both investors and consumers.

We could not support findings on the duration or the quality of the project since we did not find consistent and statistically significant results. However, both coefficients are negative and small, going in favour of a negative effect on the funding success. Results for the campaign duration are correlated with Mollick (2014), Thies et al. (2019), Cumming et al. (2017), Butticè et al. (2019), Hong and Ryu (2019); and Chen et al. (2019). We borrowed the explanation from Li et al., 2020 stipulating that campaign duration significantly decreases the chances of success, possibly because longer durations are a sign of a lack of confidence, since most of the agri-food products on crowdfunding platform are perishable fresh foods with strong randomness of output and demand (such as vegetables, aquatic products, eggs, and meat), and the campaign should be completed within the shortest time.

Finally, we complemented the set of fundamental indicators with variables important to farming crowdfunding. Despite our expectations that the campaigns initiated in rural communities will have higher odds of success, the results show the opposite, nevertheless, without statistical significance. Our assumption was that the supporters of the farming campaigns are from the local area, where smaller communities are more connected. On the other hand, crowdfunding is initially created for innovative products and services, thus, the main purpose is to seek resources for innovation-driven agricultural products (Đurđenić, 2017), which are more prevalent in urban areas, while campaign creators in rural communities usually offer somewhat simpler products and services.

Prior research confirmed that if a country finances a particular industry or a specific concept, such as agriculture or sustainability, funding opportunities are greater, and therefore fewer projects seek alternative sources of funding, throughout crowdfunding (Butticè et al., 2019; Ljumović and Hanić, 2021). Following this theory, we can expect

the campaigns initiated in countries with relatively lower importance of agriculture in the country's economy to have higher odds for success. Our result from the Kickstarter platform go in favour of this claim as the percentage of agriculture, forestry, and fishing to GDP has a negative, statistically significant regression coefficient. We relate the explanation for such results with Butticè et al. (2019), who found that when a country puts environmental issues at the top of its priorities, more financial sources are available, and entrepreneurs have more opportunities other than the use of alternative finance, such as crowdfunding. Countries with the most developed agriculture, such as the Netherlands, have a low share of agriculture in the GDP, considering that their other branches of the economy are even more developed. As a rule, underdeveloped countries have a high level of agriculture's share in GDP. It is likely that the more developed countries are, the crowdfunding instruments have the better chances of success. Ljumović and Hanić (2021), also found evidence that countries with the focus on circular economy have lower odds of the campaigns with the elements of circularity.

This research has limitations that could be addressed in the future period. The study uses data only from one reward-based platform – Kickstarter. Although it is difficult to include other platforms because of the difference in parameters, in the future period sample can be extended to other reward-based platforms. Next, we used several milestones determinants that influence campaign success. However, certainly, there are additional important factors that should be included in the analysis.

Conclusions

As an open innovation concept that can prevail the lack of financial resources in agricultural entrepreneurship, crowdfunding is a promising financing tool that can overcome the shortcomings of traditional sources of funding. Agri-food crowdfunding is a reward-based concept that allows entrepreneurs and farmers to raise small amounts of money from a group of investors (the crowd) for early-stage ventures. In return, the investors receive a reward. In that aspect, this research aimed to provide insight into the role of reward-based crowdfunding in farm financing, exposing the factors influencing the success of farming-related crowdfunding campaigns. The model used in this research included six variables: goal, duration, number of backers, blurb length, the level of urbanisation and relative importance of agriculture in the country's economy. The first four variables are standard in this type of study, but the last two were added because agriculture is typically associated with rural areas, and we assumed that the level of urbanisation could be one of the success factors, as well as because the importance of agriculture in the overall economy changes as the country develops.

Given the importance of agriculture, we analysed 1,566 projects from the Kickstarter platform for the period 2014-2020. Crowdfunding can be considered a potential option of financing initiatives, despite its lack of popularity in the farming field. To attract more donors, our findings reveal that farmers should pay special attention to creating realistic, as minimal as possible goals. In the agri-food crowdfunding small number of backers can achieve smaller on average funding goals. Additionally, we can expect

more successful campaigns in countries with relatively lower importance of agriculture in the country's economy. In other words, the odds of farming campaign success increase with lower, realistically project values, the greater number of the backers and in countries where the importance of agriculture in the economy is lower.

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Conflict of interests

The authors declare no conflict of interest.

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ANALYSIS OF THE IMPACT OF LIQUIDITY ON THE PROFITABILITY IN THE MEDIUM AND LARGE MEAT PROCESSING ENTERPRISES IN THE REPUBLIC OF SERBIA

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ABSTRACT

Liquidity and profitability are closely related economic categories. The issue of constant balancing between liquidity and profitability, in theory known as "liquidity-profitability trade off", has been the subject of significant interest of the scientific community. There is no consensus on the direction of the impact of liquidity on profitability, but the existence of this impact in practice is confirmed. The aim of this paper is to investigate the impact of liquidity on profitability, based on selected traditional financial indicators, for medium and large enterprises in the group of processing and preserving of meat and meat products of the Republic of Serbia, in the period 2016 to 2019. The findings of a multiple linear regression analysis, show that the ratio of long-term sources and fixed assets in the group of processing and preserving of meat and meat products makes a statistically significant contribution predicting the return on assets.

Introduction

Profitability and liquidity stand out as basic measures of sustainability and operational flexibility and represent the focus of the management orientation of modern companies. Liquidity is a traditional, primary measure of the survival or disappearance of a company. In our approach, solvency is not equated with liquidity, but is understood as the ability

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of a company to properly settle all its obligations and maintain stable operations in the foreseeable future (Čavlin, 2020; Radić et al., 2020). Liquidity and profitability management requires a platform (Čavlin, 2015; Milojević et al., 2020; Jokić, 2020), which will enable the smooth flow of business operations of the company, both material and financial in a certain harmony without delay, with maximum profitability, and for the lasting benefit of the company. Based on previous theoretical research, it can be concluded that there is no consensus on the direction of the impact of liquidity on profitability, but the existence of this impact in practice is mostly confirmed.

In accordance with the above, the paper has the following goals:

- the ratio analysis of liquidity and profitability of medium and large enterprises in the processing and preserving of meat and meat products of the Republic of Serbia, and

- the analysis of interdependence and the impact of liquidity on the profitability of assets based on traditional indicators.

Our initial hypothesis is that there is an impact of liquidity on profitability, but there is no consensus on the direction of that impact, and the causes of differences are determined by a number of factors, so the focus of research is on medium and large companies from the group- 10.1 in the processing and preserving of meat and meat products of the Republic of Serbia, in order to create a practical basis for a rational analysis of liquidity and profitability based on traditional financial indicators .In order to achieve the goal of the paper, along with the analysis of relevant literature, in theoretical aspects, typical parameters for liquidity and profitability are analyzed, in meat processing activity in the Republic of Serbia, using data from official financial reports of the companies in the Republic of Serbia for the period from 2016 to 2019 and performing an analysis of the impact of traditional liquidity indicators on the profitability. The paper is structured as follows: an overview of the literature on liquidity and profitability is presented below. The research method is then described, followed by results and discussion. The last section contains concluding remarks.

Literature review

The subject of significant interest, in theory and practice, is the issue of optimal balancing between liquidity and profitability so called „liquidity- profitability trade off" (Smith, 1980). A sustainable compromise between liquidity and profitability, without neglecting one to the detriment of other management values, is crucial for rational business management and the vitality of the company. The choice of a rational management response in practice is not simple, on the contrary, and the results of scientific research that has dealt with the analysis of different modalities of the relationship between liquidity and profitability are not unambiguous. So, the problem of so-called "Liquidity -profitability trade off" is complex, and below we will highlight the main results of certain research in terms of the existence and quality of the relationship between liquidity and profitability. From one aspect, the existence of a negative relationship between liquidity and profitability is indicated by research

findings of: Deloof (2003), Afza et al. (2007), Mohamed and Saad (2007), Samilogu et al. (2008), Bagchi et al. (2012), Saluja et al. (2012), Priya et al. (2013), Ehiedu (2014) and Raykov (2017). Eljelly (2004) confirms the negative relationship between profitability and liquidity on a sample of companies in Saudi Arabia, by applying correlation and regression analysis, but emphasizes the need to respect the differences between different industries. By analyzing 88 companies listed on the New York Stock Exchange, Gill et al. (2010) confirms the negative relationship between profitability (measured by gross operating profit) and the average period of receivables, but also the positive relationship between the duration of the cash cycle and profitability.

From another aspect, the existence of a positive relationship between liquidity and profitability is indicated by research findings of: García-Teruel and Solano (2007), Uyar (2009), Lamberg and Vålming (2009), Maçãs Nunes et al. (2010), Saleem and Rehman (2011), Makori and Jagongo (2013) and Mohamed and Hazem (2015).

The issue of "liquidity -profitability trade off" in developing countries has also been explored by Ehi-Oshio et al. (2013) on a sample of 40 Nigerian companies in the period 2006-2010, and based on regression analysis, a positive relationship between the size of the company and its profitability as well as between financial leverage and profitability, while a negative relationship was observed between capital structure and liquidity (measure: the sum of cash and cash equivalents) and the profitability of the enterprise. Mamić Sačer et al. (2013), analyze the impact of liquidity on the profitability of medium and large enterprises in the information and communication industry on a sample of 44 enterprises in the period 2007-2009 in the Republic of Croatia, and on the basis of correlation and regression analysis of selected liquidity and profitability indicators, they have determined the existence of a positive correlation, although of low intensity, between the current liquidity ratio and the gross return on assets indicator, from which it follows that the increase in the value of the current liquidity ratio affects the increase in the value of the gross return on assets for the analyzed companies.

The issue of "liquidity profitability trade off" in Serbia has not been sufficiently researched, and in this context research of Lukić (2012), Jovanović et al. (2017), Čavlin and Tepavac (2020) Stevanović et al. (2021). Denčić-Mihajlov (2015) suggests that larger and more liquid companies also show higher profitability, while the findings of Stevanović et al. (2019) show a significant positive relationship between quick ratio of liquidity, operating cash flow margin and cash flow investment margin on profitability measured by return on assets, and the statistically significant ratio of current liquidity indicators, liquidity indicators of operational and financial net cash flow on profitability.

When it comes to the choice for the selection of the relevant indicator of the given categories, it should be noted that it Levin and Travis (1987) pointed out to analyse ROCA instead of ROA and ROE as being deformed by shareholders' decisions to lease company's assets, while an indicator of liquidity to use working capital sufficiency, cash conversion cycle, and current or acid-test liquidity ratio. The quick ratio behaviour and impact on profitability was investigated by Ahmad (2016), Irawan and Faturohman (2015), Khidmat and Rehman (2014) and Kung'u (2017).

Materials and methods

In order to achieve the goal of the paper, typical parameters for liquidity and profitability analysis shall be analyzed, specifically the position of liquidity and profitability of meat processing activity in the Republic of Serbia, using data from official financial reports of the companies in the Republic of Serbia for the period from 2016 to 2019. The authors shall perform an analysis of the quality of the impact of traditional liquidity indicators on the profitability by using descriptive analysis and multiple linear regression analysis of the influence of two or more explanatory variables on the dependent variable will be used.

By applying this type of regression, the authors wanted to determine what percentage of the variability of the dependent variable was explained by a particular set of independent variables and the relative contribution of each independent variable included in the regression analysis (Rosner, 2011; Radović Marković, Hanić, 2018).

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_n X_n \qquad (1)$$

The assumptions of employed multiple linear regression model are:

1. linearity as the relationship between X and the mean of Y is linear;

2. Y is a random variable, because it represents a function of e and X1, X2… Xk, are not random variables;

3. the expected value of the random error is 0;

4. there is no autocorrelation (random errors are mutually independent);

5. homoskedasticity (equality of variances of random errors) - the variance of residual is the same for any value of X;

6. normal distribution of random errors;

7. explanatory variables are not mutually linearly dependent, i.e. there is no problem of multicollinearity.

The sample size is satiosfgactory as it require as a minimum at least 20 cases per independent variable in the analysis.

Results and discussion

The sample includes medium and large enterprises from the Group- 101 Processing and preserving of meat and meat products, Division -10 Manufacture of food products and Section - C Manufacturing. According to the published data, medium and large companies that submitted annual financial reports for 2019 generated a total of 96,503,502.00 dinars of operating income, which represents 71.04% of the total turnover in the Group- 101 Processing and preserving of meat and meat products, i.e. which achieved a total of RSD 2,443,100.00 net profit, which represents 74.48% of the net profit of all active companies in the Group- 101 Processing and preserving

of meat and meat products (hereinafter: meat processing activity). The situation is similar throughout the study period. Given this, the results obtained can be considered representative for the adoption of conclusions. The ratio analysis of liquidity and profitability of the observed companies was performed by analyzing:

- the average values of typical liquidity and profitability indicators for enterprises from the sample of meat processing activity, and

- the range of values of individual liquidity and profitability indicators for enterprises from the sample of meat processing activity and their grouping in accordance with the determined limit values.

By analyzing the obtained results, it is possible to point out the following liquidity and solvency parameters in the Table 1, as follows:

- all average values of liquidity indicators for companies show worse values than the desired theoretical norms, but also slightly better outcomes than the average value than those for the entire meat processing industry.

- the representation of companies that have the value of liquidity ratios below the values of the desired theoretical norms is significant, especially in the ratio of cash quick liquidity.

- considering all liquidity indicators, a high representation of companies with lower value of the expressed indicators than the desired theoretical norms is noticeable, which implies an unfavorable assessment of liquidity and unfavorable conditions for financially stable business operations of the company.

Table 1. Average and grouped liquidity ratios 2016-2019

Period		2019			2018			2017			2016	
Liquidity coefficient ranges	Company	%	%	Company	%	%	Company	%	%	Company	%	%
Coefficient of current (cash) liquidity												
0,00-0,09	24	88,89		20	83,33		12	63,16		13	86,67	
0,10-0,29	2	7,41	96,3	2	8,33	95,8	4	21,05	100	1	6,67	100
0,30-0,99	0	0,00		1	4,17		3	15,79		1	6,67	
≥1,00	1	3,70	3,7	1	4,17	4,2	0	0,00		0	0,00	0,00
Total number of companies	27	100	100	24	100	100	19	100	100	15	100	100
Average sample realization	0,16			0,13			0,09			0,08		
Average performance	0,15			0,07			0,05			0,06		
Coefficient of current (general) liquidity												
0,00-0,99	12	44,44		5	20,83		5	26,32		4	26,67	

Period		2019			2018			2017			2016	
Liquidity coefficient ranges	Company	%	%	Company	%	%	Company	%	%	Company	%	%
1,00-1,39	7	25,93	88,9	10	41,67	75,0	7	36,84	84,2	5	33,33	86,7
1,40-1,99	5	18,52		3	12,50		4	21,05		4	26,67	
≥2,00	3	11,11	11,1	6	25,00	25,0	3	15,79	15,8	2	13,33	13,3
Total number of companies	27	100	100	24	100	100	19	100	100	15	100	100
Average sample realization	1,38			1,6			1,48			1,35		
Average performance	1,08			0,93			0,89			0,94		
Coefficient of solvency (financial stability)												
0,00-0,49	12	44,44		12	50,00		9	47,37		6	40,00	
0,50-0,79	3	11,11	63,0	1	4,17	62,5	2	10,53	63,2	1	6,67	66,7
0,80-0,99	2	7,41		2	8,33		1	5,26		3	20,00	
1,00-1,49	8	29,63		8	33,33		5	26,32		3	20,00	
1,50-1,99	1	3,70	37,0	1	4,17	37,5	2	10,53	36,8	1	6,67	33,3
≥2,00	1	3,70		0	0,00		0	0,00		1	6,67	
Total number of companies	27	100	100	24	100	100	19	100	100	15	100	100
Average sample realization	0,63			0,65			0,58			0,65		
Average performance	0,62			0,59			0,57			0,57		

Source: Authors' calculations

By analyzing the results, it is possible to point out the following parameters of profitability in the Table 2:

- most of the average values of profitability indicators for the companies from the sample, show worse values than the desired norms, but also slightly better results than the average values than those expressed for the entire meat processing activity.

- the representation of companies that have the value of profitability indicators below the values of the desired theoretical norms is dominant, except for the value of indicators of return on capital, where 44.4% of companies are ranked.

- the analysis of profitability indicators shows a significant representation of companies with worse values of the expressed indicators than the desired norms, which implies an unfavorable assessment of the company's profitability in the analyzed sample, and in the observed period.

Table 2. Average and grouped profitability indicators 2016-2019

Period of time		2019			2018			2017			2016	
Range of indicators	Company	%	%	Company	%	%	Company	%	%	Company	%	%
Net profit margin												
0	5	18,5		10	41,7		5	26,3		5	33,3	
0,01-0,049	18	66,7	85,2	10	41,7	83,3	11	57,9	84,2	6	40,0	73,3
0,05-0,099	4	14,8	14,8	3	12,5		3	15,8	15,8	4	26,7	
0,10-0,19				1	4,2	14,8				0	0,0	26,7
Total number of companies	27	100,0	100	24	100	100	19	100,0		15	100	100
Average sample realization	0,02			0,2			0,2			0,03		
Average performance	0,02			0,04			0,03			0,03		
Gross profit margin												
0	3	11,1		4	16,7		3	15,8		2	13,3	
0,01-0,049	18	66,7	77,8	16	66,7	83,3	13	68,4	84,2	8	53,3	66,7
0,05-0,099	6	22,2	22,2	3	12,5		2	10,5		4	26,7	
0,10-0,19				1	4,2	16,7	1	5,3	15,8	1	6,7	33,3
Total number of companies	27	100,0	100	24	100	100	19	100	100	15	100	100
Average sample realization	0,81			0,8			0,82			0,78		
Average performance	0,79			0,8			0,82			0,79		
Return on assets (ROA)												
0	2	7,4		6	25,0		4	21,1		5	33,3	
0,01-0,049	19	70,4	77,8	8	33,3	58,3	8	42,1	63,2	4	26,7	60,0
0,05-0,099	5	18,5	18,5	7	29,2		5	26,3		3	20,0	
0,10-0,19	0			3	12,5	41,7	2	10,5	36,8	1	6,7	
0,2	0			0	0		0	0		2	13,3	40,0
Total number of companies	27	100,0	100	24	100	100	19	100	100	15	100	100
Average sample realization	0,06			0,04			0,04			0,06		
Average performance	0,03			0,05			0,03			0,04		
Return on equity (ROE)												
-0,01										0		
0	2	7,4		6	25,0		3	15,8		4	26,7	

Period of time		2019			2018			2017			2016	
Range of indicators	Company	%	%	Company	%	%	Company	%	%	Company	%	%
0,01-0,049	10	37,0	44,4	7	29,2	54,2	4	21,1	36,8	3	20,0	46,7
0,05-0,099	8	29,6		4	16,7		7	36,8		3	20,0	
0,10-0,19	4	14,8		6	25,0		3	15,8		2	13,3	
0,2-0,39	1	3,7		1	4,2	45,8	1	5,3		2	13,3	
0,40-0,59	1	3,7		0	0		0	0,0		0	0,0	
0,6	1	3,7	55,6	0	0		1	5,3	63,2	1	6,7	53,3
Total number of companies	27	100,0	100	24	100	100	19	100	100	15	100	100
Average sample realization	0,17			0,12			0,11			0,18		
Average performance	0,06			0,1			0,06			0,08		

Source: Authors' calculations

Thus, the further subject of research focuses on the analysis of interdependence and the impact of the most typical traditional liquidity indicators on one of the most important profitability indicators - ROA. The independent variables taken into analysis for the period from 2016 to 2019 are: Liquidity 1- General liquidity ratio; Liquidity 2- Cash liquidity ratio and Solvency - Relationship between long-term sources and fixed assets. The dependent variable is Profitability - Return on Assets (ROA). In order to fulfill the necessary preconditions for checking the validity of the assumptions, we performed the following checks. Initial correlations between variables in the model are given in the Correlations table (Table 3). Variables with a linear correlation of 0.7 or more should not be included in the same analysis (Pallant, 2010). All three independent variables (LIK1, LIK2, SOL) satisfactorily correlate with the dependent variable (Table 3).

Table 3. Correlation analysis

Correlations					
		ROA	**LIK1**	**LIK2**	**SOL**
Pearson Correlation	ROA	1,000	,044	,003	,336
	LIK1	,044	1,000	,626	,488
	LIK2	,003	,626	1,000	,182
	SOL	,336	,488	,182	1,000
Sig. (1-tailed)	ROA	.	,345	,488	,001
	LIK1	,345	.	,000	,000
	LIK2	,488	,000	.	,047
	SOL	,001	,000	,047	.

Correlations					
		ROA	LIK1	LIK2	SOL
N	ROA	86	86	86	86
	LIK1	86	86	86	86
	LIK2	86	86	86	86
	SOL	86	86	86	86

Source: Authors' calculations

In the Table 4 we can see that the Tolerance for each independent variable is less than 0.10, so the assumption of the absence of multicollinearity is not violated. This conclusion is also supported by the VIF values that are below the intersection point 10.

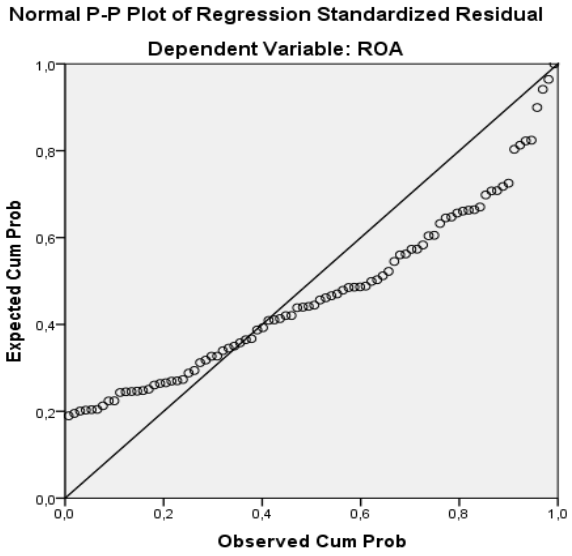
Table 4. Collinearity test

Collinearity Statistics	
Tolerance	VIF
,463	2,160
,587	1,702
,737	1,357

Source: Authors' calculations

On the Figure 1. of normal probability (Normal P-P Plot) we can see that the points lie in an approximately straight diagonal line from the lower left to the upper right corner of the diagram, which indicates that there are no large deviations from normal.

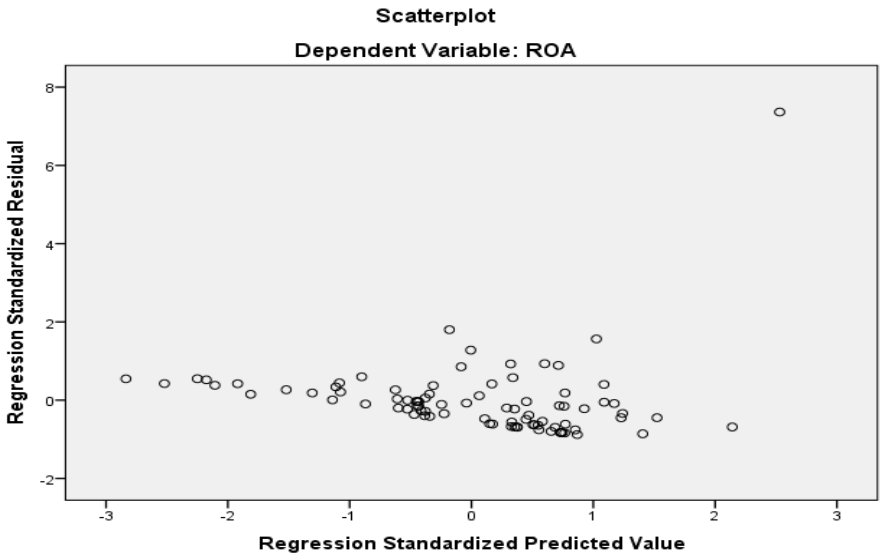
Figure 1. Figure of normal probability



Source: Authors' calculations

In the Figure 2 of scatterplot of standardized residues, the residues are approximately rectangularly distributed and most of the scatter points are accumulated in the center (around point 0).

Figure 2. Scattering diagram



Source: Authors' calculations

In the Table 5, "R" represents the value of the multiple correlation coefficient used to determine the prediction quality of the dependent variable, in this case ROA. A value of 0.36 represents a good level of prediction. The column "R Square" represents the decision coefficient, i.e. the dispersion ratio of the dependent variable that can be explained by independent variables. The value of 0.133 represents 13.3% of the variability of the dependent variable which can be explained by the independent variables.

Table 5. Model evaluation

Model Summary[b]				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	,365[a]	,133	,101	,08781
a. Predictors: (Constant), SOL, LIK2, LIK1				
b. Dependent Variable: ROA				

Source: Authors' calculations

F-value in the Table 6, shown below, tests whether the regression model is good. The table shows that the independent variables statistically predict the dependent variable well (Sig. = .008) and this actually means that our regression model is good F (3.82) = 4.193, $p < 0.05$.

Table 6. Regression model test

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	,097	3	,032	4,193	,008[b]
	Residual	,632	82	,008		
	Total	,729	85			
a. Dependent Variable: ROA						
b. Predictors: (Constant), SOL, LIK2, LIK1						

Source: Authors' calculations

From the Table 7 we arrive at the regression equation which reads ROA = 0.042–(0.019 x LIK1) + (0.012 x LIK2) + (0.053 x SOL). We then proceed to determine the significance of independent variables p <0.05 and conclude that only one independent variable makes a statistically significant contribution to our research and that is the Ratio of long-term sources and fixed assets (SOL). Neither the variable Current Liquidity Ratio (general liquidity ratio - LIK1) nor the Current Liquidity Ratio (cash liquidity ratio - LIK2) for the period 2016-2019 have provided statistically significant predictions of the variable return on assets (ROA).

Table 7. Estimates of model coefficients

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**95,0% Confidence Interval for B**	
		B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**
1	(Constant)	,042	,020		2,100	,039	,002	,081
	LIK1	-,019	,015	-,190	-1,257	,212	-,050	,011
	LIK2	,012	,035	,046	,342	,733	-,058	,083
	SOL	,053	,015	,420	3,508	,001	,023	,083

Source: Authors' calculations

We can conclude that multiple regression was performed to determine the best linear combination of LIK1, LIK 2 and SOL for ROA prediction. From the Table 7 we see that this combination of variables significantly predicted 13.3% of the variability of the dependent variable (R2 = .13, F (3.82) = 4.19, p <.01). In our study, we found that only one variable "The ratio of long-term sources to fixed assets" (β = .53, p <.001), in our model, makes a statistically significant contribution to the prediction of the return on assets. If the solvency, i.e. the ratio of long-term sources and fixed assets increases by one unit, the ROA coefficient shall increase by 0.053.

Conclusions

The profit position of a company is influenced by numerous factors and in this paper the authors wanted to additionally explore the impact of liquidity in the meat processing activity in the Republic of Serbia in the period 2006-2019. Previous research has shown the connection of these categories in different economic activities. The analysis of meat processing activity in the Republic of Serbia, in the period 2006-2019, gives a markedly unfavorable assessment of the liquidity position, and a somewhat more favorable assessment of the profit position. The findings of the regression analysis show a statistically significant and positive impact of the selected solvency ratio on the return on assets - ROA, while the impact of general and cash liquidity ratio is not statistically significant. The obtained results justify the process of analysis of "liquidity-profitability trade off" in order to show how a platform for rational management of liquidity and profitability of the company could be created. The further course of research on the issue of "liquidity profitability trade off" on the one hand should be focused on other activities and types of companies, and on the other hand on a wider range of liquidity and profitability indicators.

Conflict of interests

The authors declare no conflict of interest.

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BANKRUPTCY PREDICTION MODELS FOR LARGE AGRIBUSINESS COMPANIES IN AP VOJVODINA

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ABSTRACT

The aim of this paper is to present application of different methods used for predicting bankruptcy of large agricultural and food companies in AP Vojvodina, as well as to determine which model is the most suitable for analyzing the companies from the observed sectors. The following three models were applied in the paper: Altman's Z'-score model, Kralicek DF indicators and Kralicek Quick test. The analysis included five companies from the agricultural sector and five companies from the food sector operating on the territory of AP Vojvodina in the period from 2015 to 2019. The results of the research based on the applied models showed that different conclusions can be made about the financial stability of the observed companies. Altman's Z'-score model provided the most rigorous forecast in terms of the bankruptcy risk, while the results of Kralicek DF indicators and Quick test are relatively similar.

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Introduction

Agriculture, together with the food industry, is of strategic importance in the economic development strategy of the Serbian economy (Stošić & Domazet, 2014). In the period from 2002 to 2015, agriculture accounted for 11.1% of the total GVA in the Republic of Serbia (Novaković, 2019). The share of the food industry in the structure of GVA of the Republic of Serbia is about 4% (Domanović et al., 2018). The Republic of Serbia has favorable natural conditions for development of agriculture and thus also for food industry, which is inseparable from agriculture. For AP Vojvodina, which is dominantly agricultural area, the connection between these two industries is even more important. The common feature of these two sectors is duality of their structure, as they comprise a large number of micro and small companies, as well as a smaller number of medium and large companies, which are the backbone of these sectors. One of the key business issues of the companies in the agricultural and food sectors is related to awareness of the management about their financial position. In order to survive on the market and be competitive, every company must be able to assess the risk of insolvency, i.e. bankruptcy (Didenko, et al., 2012). There are a number of models for evaluating successfulness of a company's business. All of the models use different financial indicators, which are compared with the past or expected indicators for a specific company. The goal of financial indicators analysis is to timely detect the risk of a crisis in the functioning of the company (Jakovčević, 2011). Over time, various methods for assessing financial position have been developed, while the most commonly used and well-known methods include: Altman's Z-score model, Ohlson model, Zmijevski model, Kralicek DF and Quick test (Alihodžić, 2013; Barbut, a-Mis, and Madaleno, 2020).

The paper analyzes five large companies from the agricultural sector and five large companies from the food sector operating on the territory of AP Vojvodina in the period from 2015 to 2019. The aim of this paper is to determine the financial position of the observed companies using Altman's Z score model and Kralicek DF indicators and Quick test.

Literature review

A number of authors from our country and the region have dealt with assessment of the bankruptcy risk, i.e. assessment of the financial position of agricultural and food companies.

Burja & Burja (2013) applied Altman's Z'-score model to assess the financial position of 12 agricultural companies operating on the Romanian Stock Exchange in the period from 2007 to 2012. The results of the research showed that most of the observed companies operated in the gray zone, i.e. at risk of bankruptcy.

Rajin et al. (2016) applied Altman's Z'-score model, Kralicek DF model and Quick test to forecast the likelihood of initiating bankruptcy proceedings of agricultural companies from the Republic of Serbia. The analysis included five companies and the results of the applied models indicated that Kralicek DF model is more suitable for the observed market.

Stojanović & Drinić (2017) tested the application of Altman's Z-score models on a sample of 270 agricultural companies from the Republic of Srpska. The companies were analyzed in the period from 2011 to 2015 and it was concluded that none of Altman's models is suitable for assessing the creditworthiness of the observed agricultural companies, but that these models can be useful in detecting certain long-term financial difficulties.

Apan et al. (2018) applied Altman's Z-score model and VIKOR method to determine the financial position of 18 food companies operating in the Turkish market in the period from 2008 to 2014. By comparing the observed models, it was concluded that VIKOR method shows better results.

Vukadinović et al. (2018) applied Altman Z'-score model, Kralicek Quick test and the balanced growth model in order to determine the financial position of three companies from the agricultural sector. The research included companies which are in the process of privatization and concluded that all of the observed companies are not stable in the market and are at risk of bankruptcy.

In the paper by Stošić (2019), Altman's Z'-score model was applied in order to assess the financial success of medium-sized companies in the Republic of Serbia. The research included companies from the manufacturing, trade, agricultural and construction industry sectors. The analysis of the obtained results showed that agricultural companies are in the gray zone and that, compared to the companies from other observed sectors, agricultural companies have the highest level of financial stability and liquidity as well as the lowest level of marketability.

Kovács et al. (2020) analyzed the risk of bankruptcy for three agricultural companies operating in Hungary in the period from 2014 to 2018. The bankruptcy risk was assessed using the following four models: Altman Z-score model, Springate model, Comerford model, and Fulmer model. The results demonstrated that all four models provide the same results and that all three observed companies have a high risk of bankruptcy.

Materials and methods

The research analyzed the financial stability of 5 agricultural companies and 5 food companies, all of which are characterized as large companies, operating in the territory of AP Vojvodina in the period from 2015 to 2019. The data were taken from the annual reports of the companies (Business Registers Agency) in order to calculate the financial indicators used for analyzing the companies' financial stability. The financial stability of the observed companies was analyzed using the following three methods:

Altman's Z-score model

In 1968 Altman I. Edward (Altman, 1968) investigated the influence of various financial indicators on a company's risk of bankruptcy in the United States, and the result of this research is the model known as Altman's Z-score model. The research was performed on

a sample of 66 manufacturing companies, including 33 companies that went bankrupt and 33 companies that operated successfully. Altman used the method of multivariate discriminant analysis to test the impact of 22 business indicators on the likelihood of bankruptcy and obtained the model in which the initial number of indicators was reduced to 5 indicators proven to have the greatest impact on bankruptcy prediction. Depending on its impact on the company's operations, each indicator was assigned an appropriate ponder. As a final result of the analysis, the following discriminant function was obtained:

$$Z = 1.2 \cdot X_1 + 1.4 \cdot X_2 + 3.3 \cdot X_3 + 0.6 \cdot X_4 + 1.0 \cdot X_5$$

The indicators in the discriminatory function are calculated as follows:

Z = Z-score,

X_1 = working capital/ total assets,

X_2 = retained earnings/ total assets,

X_3 = EBIT/ total assets,

X_4 = market value of equity/ book value of total liabilities,

X_5 = sales/ total assets.

Indicator X_1 is an indicator of the company's liquidity, and the value of this indicator is obtained as the ratio of working capital and total assets of the company. Working capital of the company is defined as current assets fewer current liabilities. Indicator X_2 is obtained as the ratio of retained earnings and total assets and shows the cumulative profitability of the company. Indicator X_3 is calculated as the ratio of earnings before interest and taxes (EBIT) and total assets, and this indicator shows the company's profitability. Indicator X_4, which is obtained as the ratio of the market value of equity and total liabilities, shows how much the company's assets can decrease in value before its liabilities exceed the assets and the company enters the zone of insolvency. Indicator X_5 is an indicator of the turnover of fixed assets, and it shows the ability of the asset to generate sales.

Based on the obtained Z values, the companies are classified into three groups. The companies with Z-score value above 2.67 are considered financially stable and are classified in the safe zone. If the value of Z-score is between 1.81 and 2.67, it is considered that the business is financially unstable, but there is a chance of recovery, so the companies are classified in the gray zone. The companies with Z-score value below 1.81 are the companies that will go bankrupt and they are in the distress zone.

The disadvantage of the 1968 Z-score model was that it was not applicable to companies whose shares are not traded on the stock exchange. In 1983, Altman modified the

original model and formed Z'-score model (Altman, 1983). The difference between the original model and Z'-score model is in indicator X_4, in which the market value of equity is replaced by the book value. New ponders were assigned to the indicators, obtaining the model with the following form:

$$Z' = 0.717 \cdot X_1 + 0.847 \cdot X_2 + 3.107 \cdot X_3 + 0.420 \cdot X_4 + 0.998 \cdot X_5$$

Based on the modified model, the company is considered successful if the value of Z' is above 2.9. The value of Z' between 1.23 and 2.9 indicates that the company operates in the gray zone, while the value below 1.23 indicates high risk of bankruptcy, i.e., these companies are in the distress zone.

Kralicek DF model

Following the example of Altman's model, Kralicek applied the discriminant analysis on a sample of European companies and defined the following function (Alihodžić, 2013):

$$DF = 1.5 \cdot X_1 + 0.08 \cdot X_2 + 10 \cdot X_3 + 5 \cdot X_4 + 0.3 \cdot X_5 + 0.1 \cdot X_6$$

The indicators in the discriminatory function are calculated as follows:

DF = value of DF indicator,

X_1 = net cash flow/total liabilities,

X_2 = total assets/ total liabilities,

X_3 = EBIT/total assets,

X_4 = EBIT/operating income,

X_5 = inventories/operating income,

X_6 = operating income/total assets.

Indicator X_1 shows the degree to which net cash flow covers liabilities. Indicator X_2 is obtained as the ratio of total assets and total liabilities, and it shows the share of liabilities in total assets (Vučković, 2014). X_3 indicator is the same as in Altman's Z-score model, showing the company's profitability. Indicator X_4 is an indicator of profitability of total income, X_5 shows how many units of income are engaged in reserve funds and X_6 shows how much income is generated per unit of assets (Šverko-Grdić et al., 2017).

The value of DF can be both positive and negative, while a negative value indicates insolvency of the company and a positive value indicates solvency. The following table shows the critical values of DF indicator with the corresponding assessment of financial stability:

Table 1. DF indicator values

DF indicator value	Financial stability
>3.0	Excellent
>2.2	Very good
>1.5	Good
>1.0	Average
>0.3	Poor
≤0.3	Beginning of insolvency
≤0.0	Moderate insolvency
≤-1.0	Extreme insolvency

Source: Alihodžić, 2013

Kralicek Quick test

Quick test was created in 1990s with the purpose of examining the financial performance of companies using four indicators, including two indicators related to financial stability and two profitability indicators. Each indicator is assigned a score within the range from 1 to 5, where 1 represents the best and 5 the worst result (Vukadinović et al., 2018). The final result is obtained as the average of previously calculated average values of the indicators, expressed in points (Table 2).

Table 2. Kralicek Quick test methodology

Indicators	1 Excellent	2 Very good	3 Good	4 Bad	5 Risk of Insolvency
X_1	>0.3	0.2-0.3	0.10-0.2	0.0-0.1	Negative
X_2	< 3	3-5	5-12	12-30	>30
S1=$(X_1 + X_2)/2$ Financial stability					
X_3	>0.1	>0.08-0.10	0.05-0.08	0.00-0.05	Negative
X_4	>0.15	0.12-0.15	0.08-0.12	0.00-0.08	Negative
S2=$(X_3 + X_4)/2$ Total performance and profitability					
T=$[(X_1 + X_2)/2+(X_3 + X_4)/2]/2$ Total rating					

Source: http://www.kralicek.at/pdf/qr_druck.pdf, adapted by the authors

The indicators used in Kralicek Quick test model are calculated as follows (Alihodžić, 2013):

X_1= equity/total liabilities

X_2 = total liabilities - cash/ net profit + amortization

X_3 = EBIT/ total assets

X_4 = net profit + amortization/ business earnings

Indicator X_1 shows the share of capital in total financing sources. The recommended value of this indicator is 10% or higher. Indicator X_2 shows debt repayment period, and if the value of this indicator is above 30 years, it is considered that the company has certain difficulties with solvency, while the recommended value of this indicator is 12 years or less. Indicator X_3 shows profitability of total assets relative to operating profit. If the value of this indicator is negative, it is considered that the company has difficulties with solvency, while the recommended value is 8% or higher. Indicator X_4 shows the share of cash flow in operating income. The recommended value of this indicator is 5% or higher (Vukadinović et al., 2018).

Results and discussions

The results of the research show the financial position of the selected companies based on Z'-score model, Kralicek DF indicator and Quick test. The data required for calculation of the indicators used for the methods described in the previous chapter were obtained from the companies' financial reports. In order to determine the financial position of the companies, the data were analyzed in a period of five years (from 2015 to 2019). All of the observed companies are classified as large companies according to legally established criteria. The research included five agricultural companies: PIK Bečej (A), Mitrosrem (B), DOO Almex (C), DOO RACA Zrenjanin (D) and Perutnina Ptuj-Topiko (E), and five food companies: Carnex (F), Neoplanta G), Dijamant AD Zrenjanin (H), Jaffa Crvenka (I) and Sunoko (J).

The first step in the research was to calculate Z'-score indicators for the observed agricultural companies. These values indicate the financial position of the company (Table 3).

Table 3. Values of Z' indicators for observed agricultural companies

Company	Value of Z' indicator				
	2015	2016	2017	2018	2019
A	-0.009	5.302	4.692	4.233	4.198
B	-0.031	0.733	0.919	0.814	0.953
C	1.837	1.689	1.945	1.921	1.886
D	2.241	3.021	2.732	2.411	1.999
E	1.329	2.434	2.177	2.699	3.028

Source: Authors' calculations based on data from financial reports, Business Register Agency, http://www.apr.gov.rs

Based on the values of Z' indicator for the company A, it can be observed that in 2015 the company was in the distress zone, i.e., at high risk of bankruptcy. Z' indicator had a negative sign, and such a low value of the indicator is accounted for by a negative business result achieved in the observed year. In 2016, the company A improved its financial position, achieved a positive business result and moved into the success zone,

i.e., the safe zone, where it remained during the rest of the observed period (Z' >2.9). The company B also achieved a negative business result in 2015 and it was in the distress zone. In the following years, the company B achieved a positive result, but remained in the distress zone, which indicates that this company had difficulties with liquidity, profitability and solvency and is at risk of bankruptcy, as it was in the distress zone for the entire period (values of Z' indicators <1.23). The company C was in the gray zone during the entire observed period (1.23 <Z' <2.9), which indicates that the company is at risk of bankruptcy, but there is a possibility of improving its business and moving to the safe zone. Based on the values of Z' indicator for the company D in 2015, it can be concluded that the company operated in the gray zone (Z' <2.9). This result is accounted for by low level of liquidity and low profit rate of the company. In the following year, the company D moved to the safe zone (Z' >2.9), but due to low rate of return, it moved back to the gray zone in 2017 and remained in the gray zone for the rest of the observed period (values of Z' indicator <2.9). The company E was in the gray zone (Z' <2.9) in the period from 2015 to 2018 due to low liquidity rate and low profit rate, but in 2019 it moved to the safe business zone (Z' =3.028).

Assessment of the financial stability of the observed agricultural companies was performed also by calculating the values of Kralicek DF indicator (Table 4).

Table 4. Values of Kralicek DF indicators for observed agricultural companies

Company	Values of Karlicek DF indicator				
	2015	**2016**	**2017**	**2018**	**2019**
A	-0.810	6.227	4.208	2.897	2.565
Financial stability	Moderate insolvency	Excellent	Excellent	Very good	Very good
B	-1.474	0.957	0.894	0.115	1.139
Financial stability	Extreme insolvency	Poor	Poor	Beginning of insolvency	Average
C	1.313	1.318	1.855	2.258	1.640
Financial stability	Average	Average	Good	Very good	Good
D	1.647	3.306	4.992	1.029	1.029
Financial stability	Good	Excellent	Excellent	Average	Average
E	1.064	1.907	1.021	1.289	1.537
Financial stability	Average	Good	Average	Average	Good

Source: Authors' calculations based on data from financial reports, Business Register Agency, http://www.apr.gov.rs

According to the results of Kralicek DF indicator, the company A moved from moderate insolvency (2015) to the zone of excellent financial stability (2016 and 2017), and then to the zone of very good financial stability. Company B showed marked instability during the observed period, moving from the zone of extreme insolvency in 2015 to the zone of poor financial stability in 2016 and 2017, while in 2018 its financial stability deteriorated and the company moved to the zone of insolvency. In 2019, the situation improved and the company was in the zone of average financial stability. The financial stability of the company C during the observed period was gradually improving and

the company moved from the average zone of stability to the good and very good zone. The company D showed good financial stability in 2015, excellent financial stability in 2016 and 2017, and average financial stability in 2018 and 2019. The financial stability of the company E in the observed period varied from the average to good financial stability, which indicates a good financial position of this company.

The data obtained from the companies' financial reports were used to calculate Kralicek Quick test indicators, the number of points assigned to each indicator and the indicators of financial stability (S1) and profitability (S2) and their arithmetic mean (T), which represents the total business result (Table 5).

Table 5. Results of Quick test for observed agricultural companies

Company	Year	Indicators				Points				Score		
		X1	X2	X3	X4	P1	P2	P3	P4	S1	S2	T
A	2015	0.11	-17.95	-0.04	-0.09	3	1	5	5	2	5	3.5
	2016	0.90	0.59	0.15	0.22	1	1	1	1	1	1	1
	2017	0.89	0.84	0.09	0.17	1	1	3	1	1	2	1.5
	2018	0.88	0.53	0.06	0.12	1	1	4	1	1	2.5	1.75
	2019	0.89	0.30	0.04	0.14	1	1	4	1	1	2.5	1.75
B	2015	0.23	-25.38	-0.04	-0.19	2	1	5	5	1.5	5	3.25
	2016	0.47	14.65	0.02	0.13	1	4	4	1	2.5	2.5	2.5
	2017	0.59	15.92	0.01	0.12	1	4	4	1	2.5	2.5	2.5
	2018	0.59	146.27	-0.01	0.01	1	5	5	4	3	4.5	3.75
	2019	0.61	13.93	0.02	0.15	1	4	4	1	2.5	2.5	2.5
C	2015	0.49	9.43	0.05	0.07	1	3	4	3	2	3.5	2.75
	2016	0.48	10.10	0.04	0.07	1	3	4	3	2	3.5	2.75
	2017	0.57	5.82	0.07	0.10	1	3	4	1	2	2.5	2.25
	2018	0.59	4.80	0.08	0.15	1	2	3	1	1.5	2	1.75
	2019	0.58	6.69	0.06	0.11	1	3	4	1	2	2.5	2.25
D	2015	0.36	6.09	0.08	0.06	1	3	4	3	2	3.5	2.75
	2016	0.54	1.99	0.16	0.13	1	1	1	1	1	1	1
	2017	0.55	1.11	0.24	0.29	1	1	1	1	1	1	1
	2018	0.61	7.95	0.03	0.04	1	3	4	4	2	4	3
	2019	0.51	10.49	0.04	0.05	1	3	4	4	2	4	3
E	2015	0.29	7.84	0.04	0.07	2	3	4	3	2.5	3.5	3
	2016	0.63	2.36	0.08	0.10	1	1	4	1	1	2.5	1.75
	2017	0.62	4.82	0.03	0.06	1	2	4	3	1.5	3.5	2.5
	2018	0.69	3.31	0.04	0.06	1	2	4	3	1.5	3.5	2.5
	2019	0.72	2.43	0.04	0.07	1	1	4	3	1	3.5	2.25
Average	2015	0.30	13.34	0.02	-0.01	2	4	4	5	3	4.5	3.75
	2016	0.60	5.94	0.09	0.13	1	3	2	2	2	2	2
	2017	0.65	5.71	0.09	0.15	1	3	2	2	2	1.5	1.75
	2018	0.67	32.52	0.04	0.08	1	5	4	3	3	3.5	3.25
	2019	0.66	6.77	0.04	0.10	1	3	4	2	2	3	2.5

Source: Authors' calculation based on data from financial reports, Business Register Agency, http://www.apr.gov.rs

The company A did not have difficulties with solvency in terms of its own financing in 2015 (X_1 >10%). The second indicator had a negative sign, because the value of the achieved business result (loss) is higher than the amount of depreciation, so the obtained value indicates that the company had difficulties with solvency (X_2 >12). The average value of these two indicators is used for assessing the financial stability, so it can be concluded that the company had very good financial stability (S1=2). The value of the profitability indicator (X_3) was lower than the recommended value of 8%, and the share of cash flow in operating income (X_4) was also below the recommended value of 5%. As the average value of these two indicators (the result of S2) is used for assessing profitability, it can be concluded that the company had difficulties with profitability in the observed year. The average value of the stability and profitability indicators suggest that the company had difficulties with solvency. In the following years (from 2016 to 2019), the solvency of the company was excellent and very good (T<2).

The company B had good solvency (T <3) during the whole observed period, except in 2018 when the solvency of this company was at an unsatisfactory level. The poor financial position of the company B in 2018 is accounted for by too long debt repayment period ($X_2 = 146.27$) poor profitability ($X_3 < 8\%$) and low share of cash flow in operating income (X_4) which is significantly lower than the recommended value of 5%.

In 2015 and 2016, the company C showed the same trends for all four indicators and it was in the zone of good solvency (T <3). During these two years, the company had a high value of indicator X_1, which indicates a high share of equity. In the following years of the observed period, the company was in the zone of very good solvency, and it can be seen that in this period there was an increase in the share of equity and a decrease in the time required to repay the debt (X_2).

The company D was in the zone of good solvency in 2015, 2018 and 2019. It is a result of a longer debt repayment period (X_2) compared to 2016 and 2017, when the company was in the zone of excellent solvency with the time of debt repayment less than 2 years.

The company E was in the zone of good solvency due to low profitability (S2) in 2015, 2017, and 2018. Its profitability improved in 2016 and the company was then in the zone of very good solvency. The company E was in the zone of very good solvency also in 2019 due to good financial stability (S1 =1).

The average values of the indicators for the observed agricultural companies suggest that the companies did not have difficulties with solvency in terms of their own financing (X_1 >10%). Indicator X_2 shows that in 2015 and 2018 the companies had difficulties with the debt repayment period, which was longer than the recommended value of 12 years. According to the average scores for the first two indicators, the companies in the agricultural sector had good financial stability during the observed period. The value of the profitability indicator (X_3) was lower than the recommended value of 8%, except

in 2016 and 2017, while the share of cash flow in operating revenues (X_4) was only in 2015 below the recommended value of 5%. The average values of these two indicators show that the companies in the agricultural sector in 2015 and 2018 had difficulties with profitability. The final result (T) indicates that the observed agricultural companies had difficulties with solvency only in 2015, while during the rest of the observed period the companies had good and very good solvency.

The valuesof Z '-score indicator were calculated also for the observed food companies (Table 6).

Table 6. Values of Z' indicators for observed food companies

Company	Value Z' indicator				
	2015	2016	2017	2018	2019
F	2.215	3.355	3.137	3.224	2.128
G	2.421	2.385	2.694	2.627	3.528
H	1.506	2.409	2.067	1.502	1.951
I	2.184	2.118	1.997	2.377	2.611
J	1.086	1.968	1.405	1.000	1.181

Source: authors' calculations based on data from financial reports, Business Register Agency, http://www.apr.gov.rs

The values of Z' indicator for the company F suggest that this company was in the gray zone in 2015 and 2019 (Z' <2.9), i.e., at risk of bankruptcy, due to low profit rate. In the other years of the observed period, the company F was in the safe zone. The company G was improving its financial position over the years and after being in the gray zone during the first four years (Z' <2.9), it moved to the safe zone in 2019 (Z' >2.9). The company H and the company I were in the gray zone during the entire observed period (1.23 <Z' <2.9). These results indicate that the companies are at risk of bankruptcy, but that it is still possible to improve the companies' business and move to the safe business zone. The company J was in the distress zone in 2015, while in 2016 and 2017 it moved to the gray zone due to increased profit rate. However, as the company was in the distress zone during the rest of the observed period (Z' <1.23), it can be concluded that the company has a high risk of bankruptcy.

The financial stability of the observed food companies was assessed also by calculating the values of Kralicek DF indicator (Table 7).

Table 7. Values of Kralicek DF indicators for observed food companies

Company	Values of Kralicek DF indicator				
	2015	2016	2017	2018	2019
F	1.871	2.711	2.083	2.045	1.457
Financial stability	Good	Very good	Good	Good	Average
G	1.211	0.653	1.238	0.785	0.832
Financial stability	Average	Poor	Average	Poor	Poor
H	0.318	1.144	0.175	1.021	1.537

Company	Values of Kralicek DF indicator				
	2015	2016	2017	2018	2019
Financial stability	Poor	Average	Moderate insolvency	Average	Good
I	3.625	2.882	2.761	2.918	3.036
Financial stability	Excellent	Very good	Very good	Very good	Excellent
J	3.054	4.079	3.556	0.891	1.308
Financial stability	Excellent	Excellent	Excellent	Poor	Average

Source: authors' calculations based on data from financial reports, Business Register Agency, http://www.apr.gov.rs

According to the results of Kralicek DF indicator, the company F moved from good financial stability in 2015 to the zone of very good financial stability in 2016. However, it was followed by moving again to the zone of good financial stability in 2017, where the company remained until the end of the observed period. The company G was in the zone of poor and average financial stability during the observed period. The company H showed marked instability during the observed period, moving from the poor financial stability zone in 2015 to the average stability zone in 2016, and then to the moderate insolvency zone in 2017. The following year, this company moved to the zone of average financial stability, while in the last year of the observed period the company was in the zone of good financial stability. The company I was in the zones of excellent and very good financial stability during the observed period, which indicates that this company is not at risk of bankruptcy. The company J was in the zone of excellent stability for the first three years of the observed period, but in 2018 its position deteriorated and the company passed into the zone of poor financial stability. In the last year of the observed period, the company managed to move to the zone of average financial stability by improving its business.

In addition, the data from the financial reports of the observed food companies were used to calculate Kralicek Quick test indicators, the number of points assigned to each indicator and the indicators of financial stability (S1) and profitability (S2) and their arithmetic mean (T), which represents the total business result (Table 8).

Table 8. Results of Quick test for observed food companies

Company	Year	Indicators				Points				Scor		
		X1	X2	X3	X4	P1	P2	P3	P4	A	B	Total
F	2015	0.72	2.43	0.05	0.14	1	1	4	1	1	2.5	1.75
	2016	0.81	1.44	0.07	0.13	1	1	4	1	1	2.5	1.75
	2017	0.79	2.17	0.05	0.11	1	1	4	1	1	2.5	1.75
	2018	0.81	0.79	0.05	0.10	1	1	4	1	1	2.5	1.75
	2019	0.68	-0.13	0.04	0.11	1	1	4	1	1	2.5	1.75
G	2015	0.74	3.82	0.03	0.07	1	2	4	3	1.5	3.5	2.5
	2016	0.76	7.21	-0.01	0.04	1	3	5	4	2	4.5	3.25
	2017	0.72	3.41	0.03	0.06	1	2	4	3	1.5	3.5	2.5
	2018	0.76	5.94	0.01	0.04	1	3	4	4	2	4	3
	2019	0.84	3.94	-0.01	0.04	1	2	5	4	1.5	4.5	3

Company	Year	Indicators				Points				Scor		
		X1	X2	X3	X4	P1	P2	P3	P4	A	B	Total
H	2015	0.48	-1458.42	-0.01	-0.01	1	1	5	5	1	5	3
	2016	0.59	8.21	0.04	0.05	1	3	4	4	2	4	3
	2017	0.61	187.62	-0.01	0.01	1	5	5	4	3	4.5	3.75
	2018	0.41	11.54	0.03	0.06	1	3	4	3	2	3.5	2.75
	2019	0.45	5.69	0.06	0.09	1	3	4	2	2	3	2.5
I	2015	0.60	1.65	0.16	0.22	1	1	1	1	1	1	1
	2016	0.57	2.58	0.13	0.16	1	1	2	1	1	1.5	1.25
	2017	0.51	2.90	0.13	0.17	1	1	2	1	1	1.5	1.25
	2018	0.58	2.64	0.13	0.14	1	1	2	1	1	1.5	1.25
	2019	0.63	2.12	0.13	0.14	1	1	2	1	1	1.5	1.25
J	2015	0.23	4.85	0.12	0.35	2	2	3	1	2	2	2
	2016	0.30	2.94	0.19	0.26	1	1	1	1	1	1	1
	2017	0.19	4.82	0.16	0.26	3	2	1	1	2.5	1	1.75
	2018	0.22	14.03	0.02	0.07	2	4	4	3	3	3.5	3.25
	2019	0.26	10.15	0.04	0.12	2	3	4	1	2.5	2.5	2.5
Average	2015	0.56	-289.13	0.07	0.15	1	5	3	1	3	2	2.5
	2016	0.60	4.47	0.08	0.13	1	2	2	2	1.5	2	1.75
	2017	0.56	40.18	0.07	0.12	1	5	3	2	3	2.5	2.75
	2018	0.55	6.98	0.05	0.08	1	3	4	3	2	3.5	2.75
	2019	0.57	4.35	0.05	0.10	1	2	3	3	1.5	3	2.25

Source: authors' calculations based on data from financial reports, Business Register Agency, http://www.apr.gov.rs

According to the results of Kralicek Quick test, the company F had very good solvency during the observed period (T =1.75). As can be seen from Table 8, this company should increase its profitability, which was low during all years of the observed period ($X_3 < 8\%$). The company G was in the zone of good solvency during all years of the observed period. As was the case with the company F, this company also had difficulties with profitability, which was extremely low ($X_3 < 8\%$).

The company H was in the zone of good solvency in 2015, but based on indicator X_2 it can be seen that the debt repayment period was far longer than 30 years, and that the company had low profitability rate ($X_3 < 8\%$) and low share of cash flow in operating income (X_4), which was significantly lower than the recommended value of 5%. In 2016, the company remained in the zone of good solvency, with slightly better results. In 2017, the company moved into the zone of bad solvency, due to a new increase in debt repayment time, poor profitability and low share of cash flow in total revenues. In 2018 and 2019, the company returned to the zone of good solvency due to reduced debt repayment time, which was shorter than the recommended value of 12 years, and due to increased share of cash flow in total revenues.

The company I was in the zone of excellent solvency during the observed period, and it can be concluded that this company is not at risk of bankruptcy.

During the first three years of the observed period, the company J was in the zone of very good and excellent solvency, while in 2018, due to increased debt repayment time (X_2), low profitability rate (X_3) and low share of cash flow in total revenues (X_4), the company moved to the zone of good financial stability. In the last year of the observed period, the company reduced the time required to repay the debt, as well as the share of cash flow in total revenues, but it remained in the zone of good solvency due to low profitability rate.

The average values of the indicators for the food companies indicate that the companies in the observed sector did not have difficulties with their own financing (X_1 >10%). Based on the values of the second indicator, it can be observed that the companies had difficulties with debt repayment time in 2015 and 2017, which was the result of debt repayment period of the company H, as other companies in this sector had good debt repayment period (less than 12 years). The average values for the first two indicators show that the company had very good and good financial stability during the observed period. The value of the profitability indicator (X_3) was lower than the recommended value of 8% in all observed years except in 2016, while the share of cash flow in operating income (X_4) was above the recommended value of 5% during the entire period. The average values of these two indicators show that the food companies had difficulties with profitability only in 2018. The final result (T) indicates that the observed food companies had good or very good solvency during the entire observed period.

Conclusion

According to the results of the applied models for assessing the companies' financial position, the following conclusions can be drawn for the observed agricultural companies:

- Based on all three models, the company A is a financially stable company. The results of all three models show that the company A had difficulties with solvency in 2015, caused by negative business results, long debt repayment period and low share of cash flow in total revenues. In 2016, the company made profit and improved its business results, remaining in the zone of financial stability until the end of the observed period.

- According to Altman's Z'-score model, the company B was in the distress zone, i.e., in the bankruptcy zone, during the whole observed period. The results of Kralicek DF indicators show that this company was in the zone of extreme insolvency in 2015, and then in the zone of poor financial stability 2016 and 2017, followed by moving to the zone of beginning of insolvency in 2018, and the zone of average financial stability in 2019. The results of Quick test indicate that the company B had good financial stability in all years of the observed period, with the exception of 2018 when the debt repayment period was too long and the company had low profitability rate and low share of cash flow in operating income.

-The results of Altman's Z'-score model suggest that the company C was in the gray zone, i.e., at risk of bankruptcy, during the whole observed period, but that there is

a possibility of business improvement. On the other hand, the results of Kralick DF indicators and Quick test indicated that the company was in the zone of good solvency, i.e., it was not at risk of bankruptcy.

-According to the results of Altman's Z'-score model, the company D operated in the gray zone in all years of the observed period, except in 2016, due to low profit rate. Contrary to the results of Z'-score, the results of Kralicek DF indicators and Quick test suggest that the company was in the zone of average to good financial stability in 2015, 2018 and 2019, and that in 2016 and 2017 the company had excellent financial stability.

- The results of Altman's Z'-score model for the company E indicate that it was in the gray zone in all years of the observed period, except in 2019, when the company moved to the safe zone due to increased liquidity rate and profit rate. The results of Kralicek DF indicators and Quick test show similar results: the company had average stability in 2015, then good financial stability in 2016, average financial stability in 2017 and 2018 and very good stability, i.e., solvency in 2019.

The results of the applied models for assessing the financial position of food companies pointed to the following conclusions:

-In the case of the company F, all three models indicated different results. Based on Altman's Z'-score model, the company was in the gray zone in 2015 and 2019, while in other years of the observed period it was in the safe zone. The results of DF indicators show that the company was not at risk of bankruptcy, as from 2015 to 2018 the company had good and very good financial stability, while in 2019 it had average financial stability. The results of Quick test showed that the company F had very good solvency in all years of the observed period.

-According to the results of Altman's Z'-score model, the company G was in the gray zone from 2015 to 2018, moving to the safe zone in 2019. The values of DF indicators suggest that the company had poor to average financial stability during the observed period, while the results of Quick test show that the company had good solvency in all years of the observed period.

-The results of Altman's Z'-score model showed that the company H was in the gray zone, i.e. at risk of bankruptcy, during the entire observed period. The values of DF indicators varied greatly over the years. The company had poor financial stability in 2015, and average financial stability in 2016. Due to improved business result, the company had average financial stability in 2017, followed by moderate insolvency in 2018, and good financial stability in 2019. Quick test showed that the company had good solvency in all years of the observed period, except in 2017, when the company had poor solvency due to long debt repayment period and low profitability.

- Based on the results of Altman's Z'-score model, the company I was in the gray zone during the entire observed period. The results of DF indicators and Quick test indicated that the company had a very good and excellent solvency during the observed period and that it was not at risk of bankruptcy.

- The results of Altman's Z'-score model indicate that the company J was in the distress zone in 2015, followed by moving to the gray zone in 2016 and 2017 due to increased profit rate, and then returning to the distress business zone in 2018 and 2019. According to these results, the company was at risk of bankruptcy. The results of DF indicators suggest that the company had excellent financial stability in the first three years of the observed period, followed by poor financial stability in 2018, and average financial stability in 2019. The results of Quick test confirmed the results of DF indicators, suggesting that the company had excellent solvency during the first three years of the observed period, while in 2018 the company had good solvency due to increased debt repayment period, low profitability and low share of cash flow in operating income.

Based on the research results, it can be concluded that each of the applied models provided different results for bankruptcy assessment of the agricultural and food companies in AP Vojvodina. Since the applications of Kralicek DF indicators and Quick test provided similar results, it is recommended to use them in future research.

By calculating the average values of Quick test indicator for agricultural companies, it was observed that the companies from this sector had difficulties with debt repayment period and profitability in 2015 and 2018, which led to financial instability in 2015, while during the rest of the observed period the companies had good and very good solvency. In contrast, the results of Quick test indicated that the companies from the food sector had good or very good solvency throughout the whole observed period. According to the presented results, it can be concluded that large companies in the food sector have better business results and better financial stability compared to large companies in the agricultural sector.

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Conflict of interests

The authors declare no conflict of interest.

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SOCIAL RESPONSIBILITY OF AGROCOMPLEX ENTERPRISE/ COMPANIES IN TIMES OF CRISIS

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ABSTRACT

The paper points out the maintenance of economic activity and stability of production even in the difficult conditions of the global crisis as a consequence of the pandemic. Especially in the conditions of a long-lasting crisis, caused by a pandemic of the virus, the business or social responsibility of companies in the agro-industrial sector of the economy is observed. The aim of this paper is that, in the conditions of business crisis, social responsibility represents the optimal attendance of companies from the observed activity, and thus to contribute to the sustainability of economic development. The main goal of the paper is that, even in the conditions of the great business crisis – caused by covid 19 virus, in all economic branches and especially food producers, the socially responsible behavior of companies in the agricultural complex does not disappear. The subject of the research is the business of the company "Agroprogres" i.e. the way and model of applying the concept of social responsibility in the conditions of a great and general business crisis and the adaptability of the company from the agro complex to new circumstances. Pursuant to the subject of the research the target group of employees was selected and a survey was conducted from the aspect of the level of social responsibility of the company. Analyzing the business of a particular company, many scientific methods were used to prove the basic hypothesis: the crisis caused by the pandemic did not reduce social responsibility during its duration, i.e. business in difficult conditions.

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Introduction

The main goal of this paper is to confirm the social responsibility of companies in the agro-complex on the example of a company from the agro-industry. Other goals are to point out positive business in the conditions of the general economic crisis caused by the pandemic. Then one of the goals was to confirm the adaptability and flexibility of companies in food production in times of crisis.

Corporate/company social responsibility (philanthropy) means direct, unprofitable, giving money, products or services, and time of the company as an aid to a humanitarian action or achieving a certain social goal. It is most often realized through non-granting financial donations (to help health and social institutions, to improve the arts, education, etc.), by giving free products, services, and professional knowledge of companies to vulnerable social groups, etc. In the conditions of business imposed by the great world crisis, business, i.e. economic growth, and development of all countries, especially small economies, does not depend on the strength of their economies, but, above all, on their structure, export orientation, an inflow of foreign direct investments, and especially on world market conditions and global economic trends. Mitigating, i.e. reducing the economic consequences of the pandemic for the economic policy of Serbia will be the basic task, as well as any responsibly conducted economic policy. On the other hand, being socially responsible in extraordinary business circumstances does not only mean fulfilling legal obligations but also fully respecting health and environmental safety, legal and normative regulations, and investing even more in the capital, regulating relations with the environment, and relations with stakeholders. We live in a world that is trying in every way to reach the set goals in the shortest possible time. At that speed, it is often lost sight that the actions of the company, the works of society, and the environment, are not moral, i.e.. ethical, and the environment of the company (both wider and narrower) is damaged. Frequent changes in the environment in technology, technology, rights, and obligations of society; give modern companies more and more reasons to embark on challenges and to accept them to survive in their environment. “Social responsibility implies the obligation of management to create appropriate choices and take those actions that will contribute to the well-being and interests of society, but also the organization”. (Szwaikowski, E, W., 1986, p.105.). Companies are facing constant turbulent changes, so in various ways, they try to anticipate them as early as possible to avoid all possible inconveniences, but also to take advantage of the crisis. This paper aims to show that for all market participants (whether they appear in the role of companies and/or consumers) socially responsible business is very important for survival and development. However, the basic subject of the paper is the management of expectations of social responsibility and what is meant by that. It is also an essential issue for the eco-safety of products, which arose from a short survey in the company of an ago-industrial complex, and is inseparable from the issue of social responsibility.

Modern way of functioning of the agro-complex companies

In the twenty-first century, under the influence of the technical-technological revolution, new business activities were created, i.e. a new socio-economic structure was created, which is named: knowledge society, information society, digital economy, and electronic economy. The health crisis, that is, the pandemic that led to the general social and the most extensive economic crisis, managed to limit the boundaries of solidarity and employment of workers. All companies, almost without exception, start from the position of how much it pays to keep workers, how much to fire them, and how much to reduce their salary. All three of these options are combined. In creating eco-products, corporate social responsibility represents the optimal commitment of the company/ enterprise to contribute to the sustainability of economic development, working with employees, organizations, institutions, and the local community, to preserve products, health, quality of life, and living environment. Global companies have proven to be able to transfer innovations, technologies, and processes between markets and high speed and efficiency, with innovations in transport technologies leading to a reduction in the real costs of international transport. Technological development has also created new forms of business and entrepreneurship. The best example of this is electronic or online trade, which came to full expression during the corona virus epidemic during 2020 (Luković, Stojković, 2020; Petrović, Živković, 2021). Human resource management is a very important part of the organization because it manages human resources, which are often called "wings of the company". A very important innovation in human resource management is talent management, instead of the earlier concept of "talent hunt". Globalization, hyper-competition, the strong impact of technological progress, and change are setting new and more demanding business conditions. Regardless of crises, with the development of the business world, consumer demands are also advancing (which today are more sophisticated and well informed about all changes). In the conditions of constant development to which companies are exposed daily, the acquired competitive advantage is very difficult to maintain and maintain. They are in a constant race for survival in the harsh business world, and because of that, they are trying to progress and do business successfully in all possible ways. Increasing market demands (local, national, regional, global) are reflected in sustainable development. Among other characteristics of successful companies in the application of the concept of corporate socially responsible business (Giddens, A., 2007; Miletić et al., 2021). Corporate social responsibility (CSR) is one of the concepts of modern business that has not yet reached its maximum, but significantly, and increasingly affects companies (and their partners, consumers, the state, competition - stakeholders). The challenge for the company is to create a strategy creatively, the implementation of which will affect everyone, but also achieve positive results. Sustainable development, corporate sanity, business ethics are just some of the terms that try to explain, in the best way, the idea of corporate social responsibility. A large number of researchers (Singh, Jain & Sharma, 2015; Carroll, 2015, Pride & Ferrell, 2012; Cipek & Ljutić, 2021) indicate that socially responsible behavior of an organization can significantly contribute to

greater effectiveness, as well as positively affect the level of profitability. In the global crisis, caused by the covid 19 pandemic, business practice shows concrete examples of how companies have adapted their activities. The acceptance of a concept by society is often influenced by culture because it represents the way of life of members of a society or groups within a society (Giddens, 2007, p.24). Social responsibility implies that the company independently and voluntarily engages in activities that will contribute to the development and maintenance of the environment. Thanks to that, the company assesses the impact of its decisions on the natural, social, legal, and economic environment in which it operates. Market participants, external stakeholders, constantly monitor the company's activities. They mainly try to find out what the company is missing in its activities and thus negatively affect the local community, consumers, and even the natural environment (Petrović, P., Vuković, D., 2016). Also, great attention is paid to employees, as well as to their advancement and preservation to achieve the best possible results. The essence of this concept is that both are about the environment and concerning society, one goes above what the law prescribes. In that way, a dialogue and a real relationship are established between a given company and an association from the non-profit sector. They eat the rest, the aim of the paper is to, incite and develop socially responsible business activity that will lead to gradual solving of certain social problems (such as corruption, poverty, violence, different modes of disturbance), by using experience and good business practice in the agro-industry sector.

Conducting an assessment of the social responsibility of agricultural enterprises

The concept of corporate social responsibility appears as a means to manage risks in multinational companies, which were often on the negative list due to the attitude towards employees and the environment. This leads to the development of their proactive behavior. Based on research, it has been proven that values in society are increasing, reflecting on the business of the company (Baker, Calvin, 1988, p.77). Social responsibility is a principle by which the company enables the implementation and development of all those activities that will affect the change of environmental behavior.

The goal of such behavior is the progress, development, and maintenance of ecology, environment, health, and the well-being of the entire community. The advantages of applying the concept of corporate responsibility that will lead to the successful operation of the company are:

- ✧ Avoiding a new type of risk;
- ✧ The positive image that leads to greater consumer confidence;
- ✧ Growth of enterprise competitiveness;
- ✧ Improving the business climate and work enthusiasm of employees in the company;
- ✧ Improving the quality of the value chain;
- ✧ Reduction of legal problems;

- ✧ Positive impact on ecology;
- ✧ Improving relations with the local community and others;

In the realization of its activities, the company adheres to the conceptual phases, tasks, and programs of specific activities, which each company needs to go through to best implement the concept of corporate responsibility. A typical company adheres to the realization of the following five phases: planning, realization, verification, improvement, and return to the beginning of the concept implementation cycle.

Table 1. Implementation of the concept of corporate social responsibility (CSR)

WHEN? (conceptual phase)	WHAT? (task description)	HOW? (specific activities)
PLAN	Conducting CSR assessmen	Forming the SR leadership team
		Determining the working definition of CSR
		Overview of documents, processes, and activities of the company
		Identifying and involving key stakeholders
	Developing a CSR strategy	Obtaining support from top management and employees
		Researching what other companies are doing
		Preparation of a matrix of proposed CSR shares
		Development of possible realization variants
		Deciding on direction, approach, and key areas
	DevelopingCSR-based commitments	Researching CSR-based commitments
		Dialogue with major stakeholders
		Forming a working group to develop commitments
		Proposing obligations
	Implementation of CSR-based obligations	Implementation of CSR-based obligations
		Preparation and implementation of the CSR business plan
		Involvement of employees and others to whom obligations under the CSR apply
		Designing and conducting CSR training
		Creating a plan for internal and external communication
Verify	Verification and performance reporting	Performance measurement and verification
		Stakeholder involvement
		Performance report
Improve	Evaluation and improvement	Performance evaluation
		Identifying opportunities for improvement
		Involvement of stakeholders
Return to the beginning of the cycle		Return and start of the news cycle

Source: www.cqm.rs (accessed 26.02.2021)

In the agro-industry, especially in the agro-industry, the cluster system should be intensified so that the corporate social responsibility can be raised to a higher level according to that model as well. The development of clusters in the agricultural sector, in the future, will be directly related to the creation of a favorable business environment for small and medium enterprises, then with a stable and predictable agricultural policy, as well as various entrepreneurial initiatives aimed at joint activities and cooperation (Parušić, V., Cvijanović, J., Mihailović, B., 2013). Every form of corporate philanthropy provides huge benefits for the social community because it leads to solving a social problem or improves the quality of life of the social community. At the same time, philanthropic behavior enables a company to build a good reputation in society, which directly affects its competitiveness (Petrović, P., Živković, A., 2016). The concept of corporate social responsibility shows the boundary between what is and what is not positive within the company's operations, but also its environment. This means that all those participants who affect the business of a particular company (stakeholders) must be included. In the current conditions of the general business crisis, four arguments for and four stand out four arguments for and four stand out arguments against social responsibility, which are (Caroll, A. B., Buchholtz, A. K., Brown, J. A., 2018, p.27.):

Arguments for:

- The company is inevitably involved in social issues. It is either part of the solution or part of it problems. It cannot be denied that it is partly responsible for social problems such as are unemployment, inflation and pollution.
- The company has resources that can cope with complex social problems. With its technical, financial and managerial resources private the business sector can play a crucial role in resolving difficult social problems. After all, without the support of society, a company would not even be able to create those resources.
- Better society also means a better environment for the company. The company can increase its long-term profitability by investing in society.
- Corporate socially responsible action will prevent government intervention. The government will to force companies to do what they did not do voluntarily, as they did by law against trusts, the law on equal rights in employment and the law on control pollution.

Arguments against:

- Corporate social responsibility will prevent government intervention. The government will to force companies to do what they did not do voluntarily, as they did the law against trusts, the law on equal rights in employment and the law on pollution control.
- As an economic institution, a company does not have the ability to achieve social goals. If leadership diverts attention from achieving economic goals, it cannot expect to be successful.

• The company already has too much power. If we consider how strong the impact of the company is on people's lives and work, on what they buy and on what they value, an additional concentration of social power in his hands is not desirable.

• Because managers are not elected, and are not directly accountable to the people. Social programs businesses can easily go in the wrong direction. The market system controls successfully economic performance, but is a poor mechanism for controlling social performance.

Some research shows that over 70% of companies expect to feel the economic consequences of a pandemic on business for 6 months or longer. Over 48% companies estimate that they will not be able to overcome these challenges without additional support (UPS, 2020).

Companies must incorporate pandemic planning options into existing agility management and maintenance activities to provide a comprehensive response and ensure continuity for their key products and services. Enterprises must carefully devise different strategies: for example, independent works subcontracting to help supply chains overcome these barriers, and in particular planning regarding segments of large manual interventions and high concentration risks, including individual points of failure.

Application of the concept of corporate social responsibility in the agro-complex enterprise/company

Theoretical scientific knowledge (publications) and applied methods (survey of the target sample) as well as other scientific methods, analysis in research and synthesis of obtained qualitative observations were used in considering the application of the concept of corporate social responsibility.

The concept of corporate social responsibility is being implemented in Serbia, but this application is far from the desired level. Companies that apply the concept are those that have been privatized or founded by foreign and well-developed corporations that have been applying these values for a long time. However, some domestic companies have also shown that they are ready to accept responsibility for the implementation of the concept and to be in line with well-organized partners. Research conducted on the example of companies from the processing agro-industrial group confirms this hypothesis. The research itself was conducted to help see at what level this concept has been accepted by companies from the agro-industry, on the one hand by companies and the other hand by its consumers and users. The research method was anonymous surveys, which were adapted to the company as well as to the users. The survey, which was filled out by users, i.e. consumers, was divided into three parts:

✧ The first part - basic data on respondents;

✧ The second part - an indicator of how familiar the respondents are with the concept;

✧ The third part - an indicator of the respondent's awareness of the implementation of the concept by the given company;

The survey completed by the management of the agro-industrial company was composed of two parts:

- the first part - the familiarity of the company with the concept of corporate social responsibility and its application in the team;
- second part - issues related to both current and future activities of the company, which relate to the application of the concept;

The research was conducted on 84 randomly selected respondents, via the Internet, in the territory of the city of Belgrade, Novi Sad, and Subotica. The research period was 26.02.2021-11.04.2021. The research aimed to determine how much the management of the company "Agroprogres" accepted the concept even in times of great business crisis, but also to show how many respondents are familiar with the concept and its implementation in this company from the agro-industrial complex. Based on the set goal, the research hypothesis was developed, which is formulated as follows:

"Agroprogres" implements the concept of corporate social responsibility even in times of crisis. Users of its products also agree with this fact.

From the aspect of consumers, i.e. their familiarity with the concept of corporate social responsibility, the fact that many (32%) have not heard of such social behavior is worrying, although it is (at least should be) more widespread, even in times of crisis. For the users of "Agroprogres" products and services, the most important aspect of the application of the concept is accurate information, a good attitude towards employees, as well as environmental protection. Few of them believe that human activities and sponsorships are important for this concept, ie activity. When looking at the representatives of the company, the most important of all aspects for them is the attitude towards the employees as well as the protection of the environment. From the aspect of the possibility of the user's influence on the company to apply the concept of corporate social responsibility, the survey results show that product users cannot influence the company and its application of the concept of corporate social responsibility (81%), and a small number (19%) think otherwise. Respondents also had the opportunity to state what are all the procedures that could affect the fact that this company uses the given concept more. Some of the responses were as follows:

(1) boycott of products/services;

(2) to endeavor to provide accurate information about products and services;

(3) through various consumer unions or other organized groups, affect the image of the company and goodwill;

The majority of respondents are familiar with the work and business of companies and use their products (75%), so it can be considered that the data obtained are adequate and acceptable for concluding.

Table 2. Application of the concept of social responsibility within the company "Agroprogres"

Type of response	Users – Consumers		»Agroprogres«	
1.	Certainly not	-	Certainly yes	100%
2.	Mostly no	9%		
3.	Sometimes yes/Sometimes no	10%		
4.	Mostly yes	35%		
5	Certainly yes	46%		

Source: Survey conducted in the period 26.02. -30.03.2021.

The majority of respondents believe that the company applies the concept of corporate social responsibility, i.e. few do not agree with this fact (9%). On the other hand, the representatives of the company believe (100%) that the company adheres to socially responsible business. As activities related to this concept that has been implemented in the past year, they stated:

- ✧ "Best employer" project;
- ✧ guerilla gardening;
- ✧ employee health care;
- ✧ training and development of employees;
- ✧ support to student organizations;

It can be noticed that with these activities, the company tries to include all those activities that relate to socially responsible business and to use them to achieve successful development and functioning.

Table 3. To what extent does the Republic of Serbia encourage companies to apply the concept of corporate social responsibility

Type of response	Users - Consumers		»Agroprogres«	
1.	Certainly not	-	Certainly yes	100%
2.	Mostly no	7%		
3.	Sometimes yes/Sometimes no	21%		
4.	Mostly yes	25%		
5	Certainly yes	47%		

Source: Survey conducted in the period 26.02. -30.04.2021.

Majority of respondents, when asked whether the state and the government of our country encourage companies to implement and conduct socially responsible business, answered: mostly not. The reason for such results is considered to be the fear of the company to oppose the state and its measures. It took them a long time to get positive results and they are not ready to risk their further business. Being socially responsible does not only mean that the company adheres to legal obligations but also to progress

further and invest even more inhuman and economic capital, environment, and relations with all stakeholders, i.e. employees, shareholders, customers, suppliers, competitors, the local community, government, and NGOs. The company controlling "observes" management through the prism of three inseparable factors: clear strategies, a long-term sustainability plan, and risk assessment. On the other hand, the company should keep in mind that consumers are becoming pickier and increasingly sensitive to the performance of organizations from the aspect of social responsibility.

Table 4. Trends affecting human resource management

<table>
<tr><th>Trends</th><th>Company orientation</th><th>The role and importance of managers in the company</th></tr>
<tr><td>Globalization</td><td>More competitive</td><td>They look at the bigger picture like helping companies achieve their strategic goals</td></tr>
<tr><td>Stronger competition</td><td>Faster and more flexible</td><td>Find new ways to provide transaction services such as administration and fees</td></tr>
<tr><td>Deregulation and increased indebtedness</td><td>Focusing on people as real capital</td><td>Create highly effective business systems</td></tr>
<tr><td>Technological innovations</td><td>Focusing on quality</td><td>Striving to help firms be more efficient in challenging belts</td></tr>
<tr><td>More technologically advanced businesses</td><td>Smaller in size</td><td>Design procedures and defend your moves based on clear evidence</td></tr>
<tr><td>More service jobs</td><td>Hierarchical "flatter" (with less degree)</td><td>Work following ethical standards</td></tr>
<tr><td>More knowledge required</td><td>Organized around smaller teams</td><td rowspan="6">Have the skills needed for all of the above - for example, master strategic financial planning management</td></tr>
<tr><td>Older workforce</td><td>Less formal</td></tr>
<tr><td>Reducing power disparities with the expected mitigation of deregulation and globalization</td><td>More conservative</td></tr>
<tr><td>Slower economic growth</td><td rowspan="2">Focusing on a scientific approach to decision making</td></tr>
<tr><td>Dramatic economic downturn from 2020/2021</td></tr>
</table>

Source: Petrović, P., 2019, Serbia in the new socio-economic system, IMPP, Belgrade, pp.211-229. (Customized)

Needs of the state: for state institutions at different levels (ministries, inspections, agencies, administrations), which should create a positive environment for the functioning of organizational systems without interfering in their work, and the most important of these needs are: compliance with these laws (regarding payment taxes, contributions to environmental protection, safety and protection at work, social responsibility, consumer protection), increasing the employment rate, increasing exports and the like. And that in the conditions of the state of emergency and emergencies, such as in 2020 and 2021.

Needs of groups, activists, associations: Different groups of activists, associations, parties (consumer protection, protection of women's rights, associations of the disabled, trade unions) depending on the area of activity and interests of groups, may have one or more of the following needs: (1) consumer rights, (2) respect for workers 'rights, (3) respect for citizens' rights (gender discrimination, racial discrimination, protection of children), (4) respect for the rights of persons with disabilities, (5) participation in environmental protection, (6) participation in activities of general importance (culture, music and sports events, ecology).

Mass media and communications can shed light on the problem and point it out, and the company/enterprise can offer a solution that can be promoted as an example of good practice. It is not uncommon for the media to use their pressure to influence companies to behave responsibly so that they are not subjected to public condemnation. The basis of corporate management in the companies of the agro-industrial complex is to identify and use the effects of synergies in business activity, which is why the assessment of innovation capabilities has additional dimensions about the business unit. The assessment of the innovative abilities of the company aims to show what is the current position of the company to the previous situation, and what with current competitors. From the aspect of corporate social responsibility, implementation of internal marketing aimed at continuous improvement of employee quality, motivation, and satisfaction, this activity is crucial for creating highly competitive and advanced companies/enterprises and creating new products.

Hence, internal marketing, as a concept, focuses on the impact and importance of human resource management, because attracting and selecting competent staff, who are both willing to develop together with the company is the basis of successful business and an excellent platform for maintaining the achieved level of socially responsible activities, organizations even in times of major health crisis that, drastically and in the long run, makes business difficult.

Business and economy in emergencies

Today, socially responsible business is becoming a business model, part of business policy, in all segments of the organization, in the entire value chain, in all areas of business. This model does not create a cost for companies, but brings added value. Doing business even in the conditions of large, global crises does not have to conflict with the preservation of the working and living environment, in a multitude of new products on the regional and global market. All successful corporations have been implementing the concept of corporate social responsibility for decades. Organizations continue to invest funds to help solve problems in the community, and this assistance is most often directed at education, health, culture, sports, the arts, the protection of "green chemistry" and environmental protection. The comprehensive economic and social crisis that has been going on since the beginning of March 2020 has produced severe economic consequences. Globalization trends have significantly contributed to the faster spread of the corona virus, if it used to take years for the planetary expansion

of the disease, in the case of this virus, a month was enough. The large-scale crisis caused by the pandemic will leave serious and severe consequences in all countries, especially in developing countries and weak economies. One effective measure could be to issue corporate bonds. Namely, the advantage of bonds concerning bank loans is that annual installments are not paid, but interest together with the principal is paid at the end of the repayment period, which frees up the cash flow of companies.

Even in the conditions of a pandemic, the problems of environmental pollution, inappropriate attitude towards employees, increasingly difficult position of consumers, etc., are phenomena for the suppression of which national and international regulations and norms are still being developed. In the general economic crisis, companies and individuals need help in overcoming the difficulties caused by the long-term recession, but such help has its limits determined by the fiscal deficit and public debt. Therefore, if these borders are crossed, the entire economy is exposed to great risk and macroeconomic instability, which would affect all segments of the economy and society. The coronary virus pandemic that has plagued economies around the world has only deepened social inequality. While several employees are lucky enough to work from home, millions of workers lose their jobs or risk their health in lower-paid jobs away from their homes. It should continue to be borne in mind that the health crisis has been going on for a long time, with disastrous consequences for the economy and the standard of living of the population. Although it has become increasingly clear that the global challenge requires a global response, the virus has continued to undermine the world economic order by showing that it is not equipped to adequately cope with the challenges of mega-infections or climate change.

The states acted as if the virus was exclusively theirs: they closed the borders, made stocks of protective equipment, controlled the iso. It was seen that none of the great powers was looking for a solution in a multilateral system that had collapsed. Therefore, small economies and countries still face a great challenge: how to resist the long-lasting crisis at the global level and how to be flexible in all ways, ie to prevent problems. However, what is more, devastating than a long-lasting pandemic is the global food shortage as well as the impossibility of producing and transporting food to consumers. Experts claim that the world has not faced hunger like this so far. The number of those facing acute hunger has reached 265 million inhabitants of the planet by the end of 2020 (Biočanin, R., Badić, M., Milenković, N., Stevančević, D., 2020). The world has experienced severe crises of hunger and food shortages in the past, but they were regional and caused by one factor or another - either extreme weather or economic breakdowns, wars, or political instability. A major crisis is predicted in the business of agro-complex companies, caused by famine, it is global and it has led to it through factors related to the pandemic and the disruption of the hitherto valid economic order (Živković, D., Petrović, P. Ercegović, M., 2021).

- ✧ Sudden loss of income for millions of those who had already survived;
- ✧ The collapse of the price of oil and other energy sources;

- ✧ The widespread absence of a strong or stable currency;
- ✧ Drying out of sources of income from tourism;
- ✧ The sudden return of workers from abroad and lack of funds to deliver home;
- ✧ Ccurrent problems - climate change, increase in violence and crime, sudden and forced dislocation of the population, and humanitarian catastrophe;

From the aspect of maintaining continuity, i.e. business, which implies the current level of corporate social responsibility, the impact of the pandemic on man, issues of renewable resources, and the energy sector (especially when it comes to environmental degradation and the phenomenon of climate change) should be taken into account.

Conclusion

The concept of corporate social responsibility implies the integration of social and environmental concepts by companies in the implementation of business processes, together with stakeholders, voluntarily. This responsibility is directly related to good and ethical corporate governance, and if it is understood in such a way within the company, it can result in a positive impact on consumer behaviour in the market. It is a concept in which the company integrates care for consumers, users, employees, and institutions voluntarily. Social responsibility not only means fulfilling a pre-defined legal obligation, but is also connected with the progress of society and the environment. One way for organizations to gain a large number of users and customers is to solve community problems and get involved in the community. Corporate - social responsibility is seen as a series of activities that improve the quality of life for all stakeholders - the local community, clients, and, naturally, a large part of these activities is aimed at improving the work and life of employees. In a major business crisis, caused by a virus pandemic, this specific responsibility is the company's commitment to contribute to the sustainability of economic development, working with employees, families, local community, and society, to preserve health, quality of life, improve quality and innovate products and secure marketing. to an increasingly discerning market. Increased interest of organizations in the role in society is conditioned by increased sensitivity and awareness of ethical and environmental issues. In the modern approach to economic activities, there is a growing attitude that the company/enterprise should not only make a profit but should have a positive impact on the social environment in which it operates. Corporate social responsibility results in positive public opinion, brand protection and loyalty, higher status, and better communication with all stakeholders in general. Even in the conditions of the crisis, conditioned by the pandemic, standards and laws are being established that force investors and managers to take into account corporate and social responsibility and the implementation of business policy in that direction. If investors and financial analysts take into account the environmental and social performance of organizations, then this responsibility allows organizations better access to capital and "passes" goods in an increasingly picky market. The coronavirus pandemic has starved millions of people around the world.

General quarantine and prescribed distance-keeping measures have led to increasing lay-offs and declining demand for labour - and thus reduced incomes. Also, there is a high probability that disturbances in agricultural production and recent supply lines will occur. This has led to concerns, not a small part of humanity: how to "soak" enough funds to feed themselves? On the other hand, it brought difficult questions to companies: how to do business successfully in long-term crisis conditions and how to continue to be a socially responsible company? The crisis caused by the pandemic in a very short time has led to global economic changes that imply the deepest recession. It is believed that the scale and necessity of social and economic assessments and shocks will represent an unprecedented modification of human interactions with the environment, whose impacts will be long-term and widespread. The pandemic shapes the economic, political, and social aspects of human civilization, and is characterized by the fact that, due to irregular cyclicality, they are difficult to analyze and have significant multidimensional effects. From the aspect of corporate social responsibility, the relationship between the pandemic and the environment pays special attention.

However, as the virus spreads, so does misinformation. Therefore, adequate assessments, forecasts, monitoring, the undertaking of adequate measures and contents of eco-safety at all levels, knowledgeable and joint, where the profession and science suggest, are necessary. The long-term consequences of the pandemic are expected to bring about changes in the culture of organizations (including social responsibility) and the wider social environment, and to reflect companies' digital infrastructure, working time flexibility increased business uncertainty and changes in business models and adjustments. Combining the consequences of a pandemic with the speed of events, which are recognized as part of the fourth industrial revolution, opens day by day the door to a completely new business environment. Only if these conditions are met can the awareness and role of socially responsible companies (even from the agro-industrial sector) be raised to a higher level of responsibility. Only if these conditions are met can the awareness and role of socially responsible companies (even from the agro-industrial sector) be raised to a higher level of responsibility. The most important results and main conclusions are related to the adaptability of business and increasing the level of social responsibility. Therefore, in order to neutralize the severe economic consequences of the pandemic, it is necessary to use more intensively mainly own resources aimed at:

1) high growth of domestic private investments in all economic branches;

2) efficient legal, tax and banking regulations, i.e. system;

3) more even regional and local economic development;

4) higher share of more expensive living labor and scientific contribution to GDP creation;

5) greater participation of strong industrial companies carrying technological progress, with higher employment of small and medium enterprises, as subcontractors;

6) foreign investments in the function of raising technological and managerial

knowledge; Only if these conditions are met can the awareness and role of socially responsible companies (even from the agro-industrial sector) be raised to a higher level of responsibility. The covid 19 pandemic has caused unprecedented circumstances and problems for humanity, so that showing corporate social responsibility is, among other things, a moral task of all organizations.

Conflict of interests

The authors declare no conflict of interest.

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INFLUENCE OF INPUT PRICES ON FUTURE APPLE PRODUCTION

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ABSTRACT

This paper analyzes the impact of human labor prices, mineral fertilizers, pesticides and oil on future apple production, based on ten-year data from 10 surveyed apple producers in the Republic of North Macedonia. The results showed that the prices of all inputs (except oil) in the future period (until 2029) will rise, and that the value of production will decrease. This, in turn, will directly affect the reduction of surface volume and apple production.

Introduction

Agricultural production in North Macedonia is organized on 1,266,008ha during 2017. Of that, 1.3% are orchards, or 14,543 ha, mainly (87.9%) from individual farms. Orchards account for about 3% of the country's total arable land.

According to the data from the State Statistical Office (SSO), the total number of fruit trees in 2010 was 8,315,535 trees, and in 2019 - 9,692,759, which represents an increase of 11.7%. SSO does not provide data for all fruit crops, but only for: cherries, sour cherries, apricots, quinces, pears, apples, plums, peaches, walnuts and almonds. Here, apples dominate with 54%, in 2010 and with 50.5%, in 2019.

The average area under apples in the past ten years (2010-2019) is 5,340 ha. Here, the dominating municipality with almost 65% is Resen. Within the total area in the municipality of Resen (average 3,470 ha), the most planted varety of apples (over 60%) is the variety Ajdared (Municipality of Resen: Investor Guide, 2014). This variety is followed by planting the varieties Golden Delicious, Mutsu and Red Delicious with over 10%, Jonagold and Granny Smith with 3% each, as well as the varieties Fuji, Gala, Rubystar, Hapki, etc., with over 2%.

However, the analyzed data showed that there is a relatively large fluctuation in the research period, both on the surface and the total number of fruits, as well as the total production and average yields of apples.

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The aim of this paper is to determine the impact of future apple production in Macedonia, based on the movement of prices of major inputs,.

Materials and methods

For the realization of the set goal, we used official data from state institutions: State Statistical Office (SSO), Ministry of Agriculture, Forestry and Water Economy (MAFWE), Agency for Financial Support of Agriculture and Rural Development (AFSARD), as well as data from 10 surveyed individual agricultural holdings in the country, mainly (six holdings) from the municipality of Resen. We also used data (prices) from the archives of private companies that have been selling mineral fertilizers and pesticides in this time period.

The research refers to the period from 2010 to 2019 as a ground (base), and the forecast is made until 2029.

We performed the data processing with several mathematical-statistical methods: minimum, maximum, average values, exponential trend, comparative method and other methods, common for such agro-economic research.

Results and Discussions

Movement of the quantity and prices of labor

According to the statements of the surveyed agricultural holdings, an average of 1,500 h of human labor is consumed in the process of apple production. This consumption depends, primarily on the degree of realization of the usual production technology, which in turn ranges in the interval difference of 12.7 hours between the minimum and the maximum.

The research has shown that the price of labor ranges from a minimum of 71.00 MKD/h, in 2010 to a maximum of 113.00 MKD/h in 2019 or there is an interval difference of 42 MKD/h (Table 1).

Table 1. Dynamics of total costs and prices of basic inputs in apple production

Year	Type of cost					Total costs (MKD/ha)
	Labor (MKD/h)	NPK 8:16:24 (MKD/kg)	NPK + Mg 6:14:12:14 (MKD/kg)	Pesticides (MKD/kg)	Oil (MKD/l)	
2010	71,00	70,00	160,00	1.192,00	57,00	156.610,00
2011	75,00	70,00	160,00	1.192,00	66,00	164.068,00
2012	80,00	70,00	160,00	1.192,00	72,00	172.540,00
2013	82,00	70,00	160,00	1.210,00	69,00	175.454,00
2014	85,00	70,00	160,00	1.290,00	65,00	179.525,00
2015	86,00	70,00	160,00	1.290,00	52,00	178.594,00

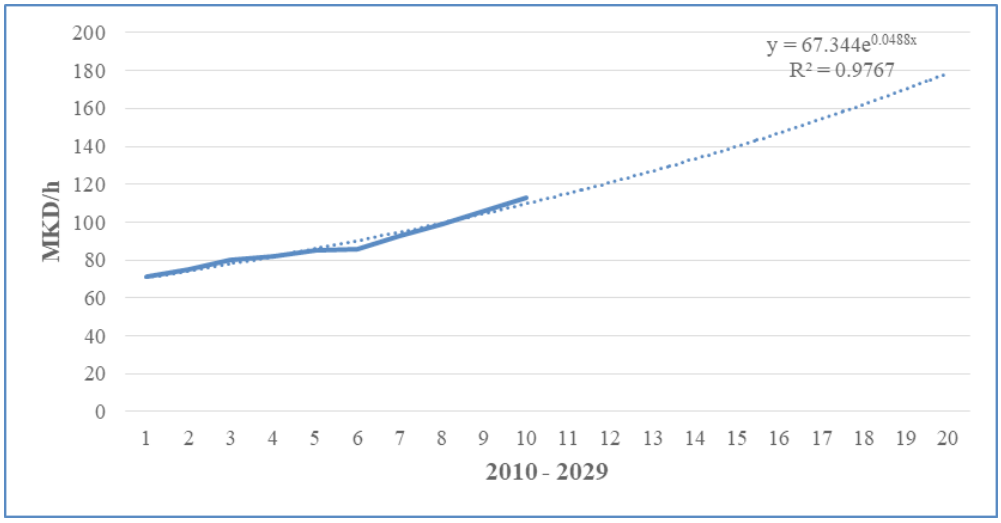
Year	Type of cost					Total costs (MKD/ha)
	Labor (MKD/h)	NPK 8:16:24 (MKD/kg)	NPK + Mg 6:14:12:14 (MKD/kg)	Pesticides (MKD/kg)	Oil (MKD/l)	
2016	93,00	65,00	170,00	1.290,00	48,00	166.521,00
2017	99,00	65,00	180,00	1.299,00	53,00	176.658,00
2018	106,00	65,00	180,00	1.299,00	63,00	189.093,00
2019	113,00	65,00	180,00	1.325,00	62,00	199.194,00
Average	**89,00**	**68,00**	**167,00**	**1.257,90**	**60,70**	**175.826,00**

Source: Author calculations based on data from the State Statistical Office of RNM, private agricultural pharmacies, energy regulatory commission of RNM.

As it can be seen from the data shown in Table 1, the cost of human labor is constantly increasing. Such an increase in the average price of human labor will cause a continuous increase in the future, until 2029 (Figure 1). Here, the increase is 38% of the average price.

The increase in the price of the human labor is a result of the fact that the number and quality of the labor force in Macedonia is continuously decreasing in the current period. This is primarily due to migration from rural to urban areas, but also due to emigration abroad.

Figure 1. Labor price trend



Source: Our calculations based on data from the State Statistical Office of RNM.

Movement of the quantity and prices of mineral fertilizers

The mineral complex granular fertilizer, composed of nitrogen, phosphorus and potassium in the proportions of 8:16:24, is used in an average amount of 350 kg/ha for apples.

Figure 2. NPK (8:16:24) price trend

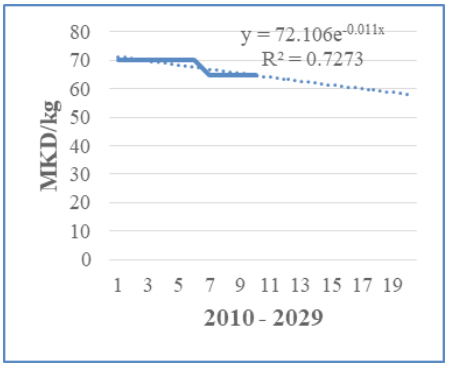
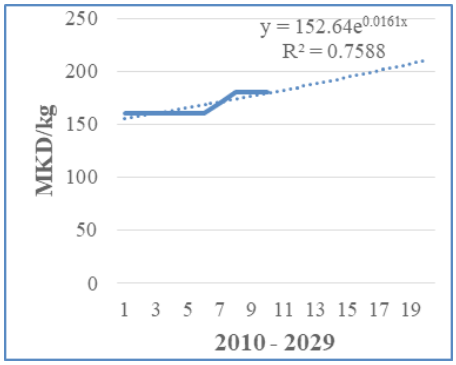


Figure 3. NPK+ Mg (6:14:12:14) Price trend



Source: Our calculations based on data from the private agricultural pharmacies

The research has shown that the prices have been relatively stable (Figure 2), with 70.00 MKD/kg in the first 6 years (2010-2015) and then the prices decreased to 65.00 MKD/kg: Predictions are that the decrease will continue in the period that follows.

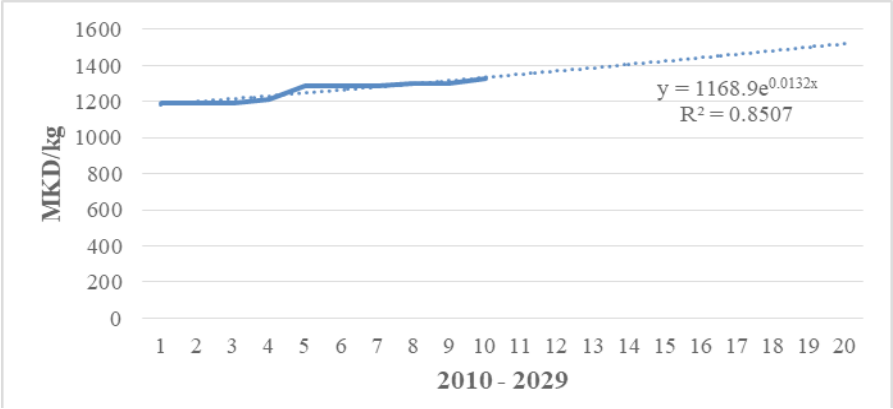
In the technological process of apple production, the farmers use the so-called crystalline fertilizer NPK + Mg (6: 14: 12: 14), in an average amount of 30 kg/ha. It is easily soluble in water, and efficiency is increased if used with the drip system.

The prices of the crystalline fertilizers, compared to the granulated one, were continuously increasing (Figure. 3). The average price was 167.00 MKD/kg. The trend shows that the increase will continue in the future, when it will reach 187.00 MKD/kg.

Movement of the quantity and prices of pesticides

At an average pesticide consumption of 3.0 kg/ha, the average price was MKD 1,257.90 MKD/kg. The increase of prices will continue in the next period (Figure 4).

Figure 4 – Pesticide price trend



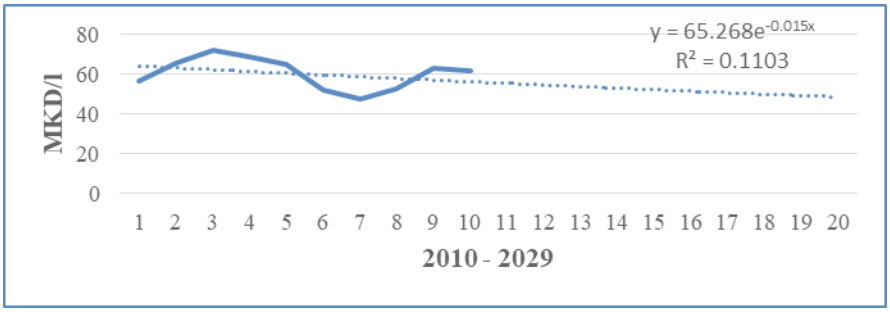
Source: Our calculations based on data from the private agricultural pharmacies

The average annual increase will be 0.85 MKD/kg, and at the end of the period (2029), the average price will reach 1,334.00 MKD/kg.

Movement of the quantity and prices of oil

Oil, in addition to human energy, is the main energy source for performing mechanized work processes in apple production. Here, the average annual consumption is 162 l/ha MKD/l MKD/l.

Figure 5. Oil price trend



Source: Our calculations based on data from the energy regulatory commission of RNM

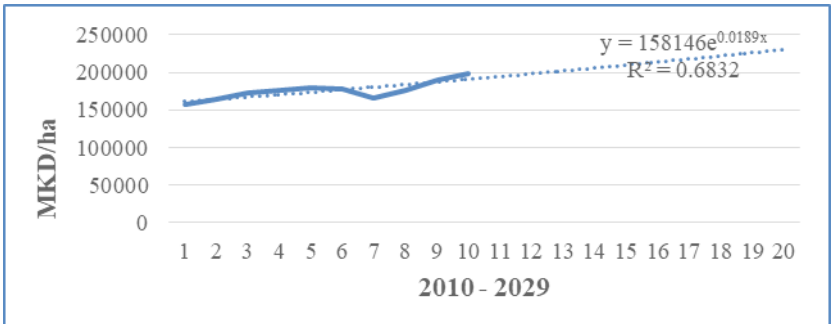
It is generally known that oil is a so-called stock market product. Therefore, the price depends on the movement of oil supply on global stock exchanges. For that reason, in our country, the price of oil in the past ten years has been moving in the interval difference of 14.00 MKD/l, i.e. from a minimum of 48.00 MKD/l. in 2016 to 72.00 MKD/l. in 2012 (Tab. 1).

In general, the price of oil will decrease in the next period, so that in 2029 it will be 60.90 MKD/l (Figure 5).

Movement of total costs in apple production

The research has shown that the total cost of apple production is increasing year by year (Figure 6). The cost ranged in the interval of 42,584 MKD/ha.

Figure 6. Trend of total costs



Source: Our calculations based on data from the State Statistical Office of RNM

The upward trend will continue until the end of 2029, when the total production costs would amount to 199,201.00 MKD/ha. This increase will also negatively affect the profitability of apple production.

Movement of value and income in apple production

It is known that the value of production is a function of the amount of produced quantity of apples and the purchase, ie market prices. Here, we take the purchase prices that are relevant for this purpose, because they are determined on the base of the total value and the total quantity of purchased apples, separately for human consumption and processing. Market prices, on the other hand, are determined regardless of the quality of apples.

The statistical data (Table 2) showed that the average of achieved yields in our country was 21,414 kg/ha in the past ten years. Of that, 86% class I II, ie. apples for human consumption and 14% apples for processing, ie class III.

However, the value of production in the past period ranged from 150,718.00 MKD/ha in 2017 to 430,922.00 MKD/ha in 2018, i.e. in a relatively wide range of 280,204.00 MKD/ha.

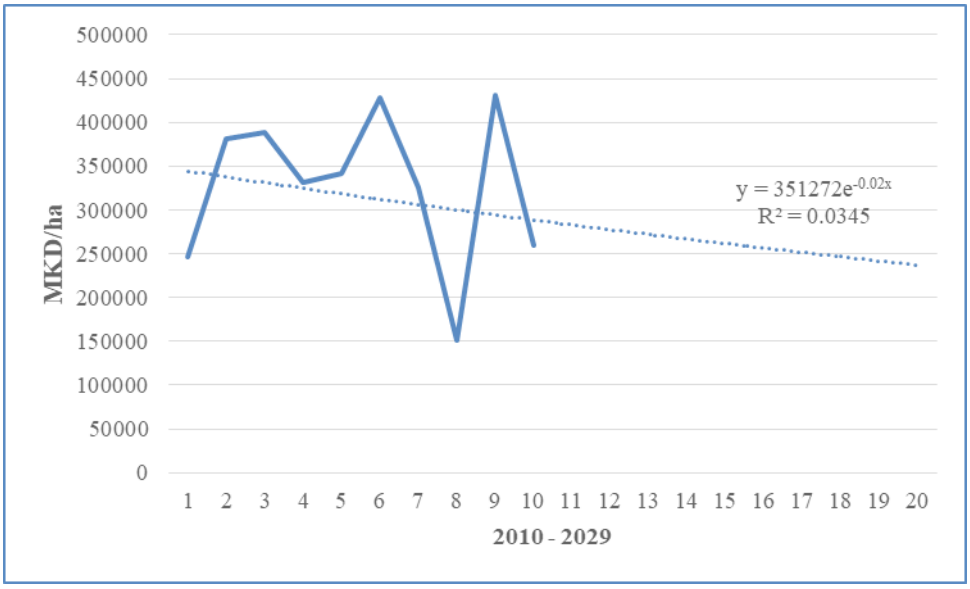
Table 2. Dynamics of total production income

Year	Yield, (kg/ha)			Purchase Price, (MKD/kg)		Value, (MKD/ha)			Subsidies (MKD/ha)	Total Income 9+10 (MKD/ha)
	Total	Class I, II	Class III	Class I, II	Class III	Class I, II	Class III	Total		
1	2	3	4	5	6	7	8	9	10	11
2010	23240	19986	3254	11,79	3,35	235674	10897	246571	43700	290271
2011	24070	20700	3370	17,45	5,74	361263	19351	380614	25000	405614
2012	24070	20700	3370	17,82	5,96	368944	20085	389029	25000	414029
2013	21580	18559	3021	16,52	8,34	306674	25190	331864	28000	359864
2014	20750	17845	2905	18,13	6,07	323476	17645	341122	33000	374122
2015	29880	25697	4183	15,19	8,89	390344	37184	427528	33000	460528
2016	21580	18559	3021	17,24	1,98	320045	5985	326030	33000	359030
2017	8300	7138	1162	20,42	4,26	145764	4954	150718	33000	183718
2018	24900	21414	3486	19,48	3,94	417175	13747	430922	39600	470522
2019	15770	13562	2208	18,63	3,04	252714	6715	259429	50000	309429
Average	**21414**	**18416**	**2998**	**17,27**	**5,16**	**312207**	**16175**	**328383**	**34330**	**362713**

Source: Our calculations based on data from the State Statistical Office of RNM

The large fluctuations in value from year to year, mainly in a negative direction, will have negative effect in the future as well, i.e. the value of production will decrease (Figure 7).

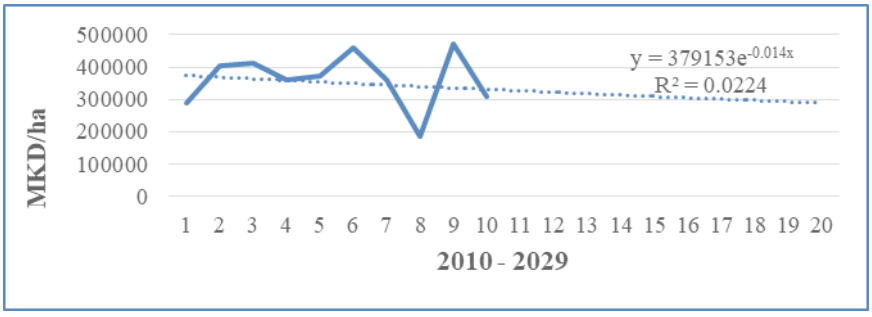
Figure 7. Trend of the total value of production



Source: Our calculations based on data from the State Statistical Office of RNM

Therefore, in order to increase the income of the family farms that produce apples, the state subsidizes that production. Nevertheless, the total revenues from apple production in the future will move downwards (Chart 8).

Figure 8. Trend of total production income



Source: Our calculations based on data from the State Statistical Office of RNM

Conclusions

Based on the results of the study, the following conclusions can be drawn:

1. The price of labor is continuously increasing due to the fact that the number and quality of labor in North Macedonia is continuously decreasing in the current period. This is primarily due to migration from rural to urban areas, but also due to emigration abroad.

2. The prices of some mineral fertilizers (especially crystalline) and pesticides are increasing. This is due to the fact that the application of crystalline fertilizers is significantly facilitated by irrigation systems. The prices of pesticides are increasing, because they are imported and the importer has exclusivity, i.e. there are no competitors in the country.

3. The total costs increased as a result of the increase in certain types of costs. This situation will continue until the end of 2029. This increase will also negatively affect the profitability of apple production.

4. Large fluctuations in value from year to year, mainly in a negative direction will also have a negative impact in the future, ie. the value of production will decrease.

Conflict of interests

The authors declare no conflict of interest.

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Introduction

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Acknowledgements

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2. Hjalager, A. M., & Richards, G. (Eds.). (2003). *Tourism and gastronomy*. Routledge, London.
3. Mićović, A. (2017). Tourism Development and Evolution of Tourism Related Rules, *2nd International Scientific Conference – Thematic Proceedings II*, Faculty of Hotel Management and Tourism, Vrnjačka Banja, 181-202. Retrieved from http://www.hit-vb.kg.ac.rs/conference/images/thematic_proceedings/2017_II.pdf
4. Stošić, L., & Stošić, I. (2013). Diffusion of innovation in modern school. *International Journal Of Cognitive Research In Science, Engineering And Education (IJCRSEE),* 1(1), 12-24.

5. Domanović, V., Vujičić, M., & Ristić, L. (2018), Profitability of food industry companies in the Republic of Serbia, *Economic of Agriculture*, 65(1), 11-32. doi:10.5937/ekoPolj1801011D
6. The Food and Agriculture Organization of the United Nations (FAO), Retrieved from http://www.fao.org (July 31, 2018)

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For the best quality final product, it is highly recommended that you submit all of your artwork – photographs, line drawings, etc. – in an electronic format.

Example:

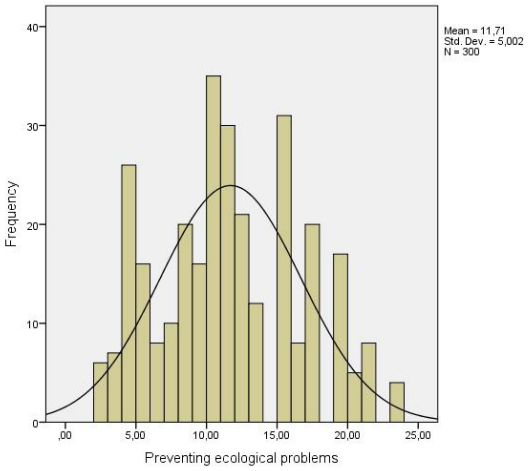
Table 1. The distribution cost of packaged goods from Subotica to retail-store objects

Indicators	Period			Total
	Month 1	Month 2	Month 3	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

Source: Petrović, 2012

All illustrations whether diagrams, photographs or charts are referred to as Figures. The name and number of figures should be centered on the line above a figure.

Figure 1. Agriculture, value added (% of GDP)



Source: Authors' calculations

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