

## Economic indicators of profitability in the production of organic and conventional food and psychological ways of overcoming the crisis in managers due to the possible decline of business during the COVID-19 pandemic

### Ekonomski pokazatelji profitabilnosti u proizvodnji organske i konvencionalne hrane i psihološki načini prevazilaženja krize menadžera zbog mogućeg pada poslovanja tokom pandemije COVID-19

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#### Abstract

*The COVID-19 virus pandemic has led to huge changes in the business of many companies. Managers and owners of companies were most affected, so in one segment of this paper, certain psychological ways that are available to people when it comes to overcoming various crises. Considering that profitable business is a condition for the survival of companies, in this paper, a comparison of profitability in the production of organic and conventional food was performed. ROA and ROE were calculated on a sample of 150 food producers in our country for the period from 2016 to 2020. The results showed that ROA is higher in conventional food producers, while ROE is higher in organic food producers. During the COVID-19 pandemic, the profitability of food producers is higher than in the period before its outbreak. Also, there is a tendency to increase profitability in both types of production.*

**Keywords:** organic production, conventional production, profitability, COVID-19, psychological mechanisms of overcoming business crisis.

#### Sažetak

*Pandemija virusa COVID-19 dovela je do ogromnih promena u poslovanju mnogih kompanija. Najviše su pogođeni menadžeri i vlasnici preduzeća, pa su u jednom segmentu ovog rada određeni psihološki načini koji su ljudima dostupni kada je reč o prevazilaženju raznih kriza. S obzirom da je profitabilno poslovanje uslov opstanka preduzeća, u ovom radu je urađeno poređenje rentabilnosti u proizvodnji organske i konvencionalne hrane. ROA i ROE su izračunati na uzorku od 150 proizvođača hrane u našoj zemlji za period od 2016. do 2020. Rezultati su pokazali da je ROA veći kod proizvođača konvencionalne hrane, dok je ROE veći kod proizvođača organske hrane. Tokom pandemije COVID-19, profitabilnost proizvođača hrane veća je nego u periodu pre njenog izbijanja. Takođe, postoji tendencija povećanja rentabilnosti u oba tipa proizvodnje.*

**Ključne reči:** organska proizvodnja, konvencionalna proizvodnja, profitabilnost, COVID-19, psihološki mehanizmi prevazilaženja poslovne krize


## 1. Introduction

The COVID-19 pandemic has been greatly changed the business of the companies and they had to adapt to doing business in the totally new environment. While the current pandemic is a burden for some companies, some others companies see it as a chance and opportunity to increase their profits and market share (Hope et al., 2020). Profitability at some companies declined during the pandemic while some companies reported an increase in

profits during its duration. Profitability decreased in the financial, construction and service sectors, while it increased in the consumer goods sector (Devi et al., 2020) and the insurance sector (Bryan & Tsai, 2020). When it comes to starting food production, one of the most important aspects is profitability is the fact whether investing in production will bring out a sufficient rate of profit in order to justify that initially investment. In assessing and making assessments of companies'

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profitability global ROA and ROE profitability indicators are most often used.

This paper makes significant contribution to the scientific literature by showing changes in economic indicators of profitability in the production of organic and conventional food in normal and pandemic conditions, while, at the same time deals with very important psychological factors – such as possible ways in which managers could overcome any business crises, who are in general in every company on the first strike and under the greatest pressure and stress level when the problems in business occur.

When it comes to the production of organic food and choosing the best place on the market, producers in general usually decide to produce organic or conventional food, given that GMO production is not so represented, that its market is insignificant and small as well as the number of customers. The dominant motive for buying organic food in Serbia is caring for one's own and the health of family members (Čolović & Mitić, 2021). The main purpose of this research is to determine the profitability of organic and conventional food producers so that, on the basis of obtained data, companies and managers can decide which type of production is more profitable. When comparing organic and conventional food, the first thing that it must have been borne in mind the fact that the market for organic food and its production is constantly growing (IFOAM, 2020). Higher demand for organic products, as well as, political support is affecting the growth of the organic food market (Huang et al., 2016). Also, it would be wise to take into account the amount and structure of costs, which are quite different in these types of food production. Higher production costs as well as lower yields are offset by higher organic food prices (Suwanmaneepong et al., 2020). The selling prices of organic food are higher than the food produced in the conventional way, according to the results of a large number of studies (e.g., Guesmi et al., 2012; Lee et al., 2016; Prodanović & Babović, 2014; Torres et al., 2016). Therefore, organic production is considered more profitable than conventional (Bayramoglu & Gundogmus, 2008; Guesmi et al., 2012; Lee et al., 2016).

The COVID-19 pandemic naturally led to certain changes in food production while maintaining an appropriate level of profitability. As a result, managers of all hierarchical levels, as the most responsible persons for business, are under the great pressure, which also affects the increase of their stress levels, appearance of burnout syndrome and characteristic managerial diseases, due to the different business problems and professional crises (Birknerová & Čigarská, 2021; Macias- Maldonado. al., 2015; Macias-Velasquez. al., 2019). According to the results of the latest research, the level of professional stress has generally increased among all the employees in companies in Serbia compared to the period before the pandemic (Čolović et al., 2022), in Slovenia (Rožman & Tominc, 2021), as well as Singapore (Lee, 2021). Psychological mechanisms underlying the overcoming of certain professional crises which are available to managers during the weaker production and general business caused by the COVID-19 pandemic are also discussed in current paper.

The paper is structured as follows. After the Introduction, the second part presents the results of contemporary and relevant research that deals with this and similar topics. Section 3 is the Metodological part of this paper and precisely describes the sample, variables, and design of the research. The empirical results of the research are analyzed in Section 4, and the Conclusions can be found in the last part.

## 2. Literature review

The organic industry is one of the fastest growing sectors, and in the period from 2013 to 2015 it recorded a growth of as much as 400 percent (Froehlich et al., 2018). In the period from 2000 to 2017, the demand for organic products increased by 330 percent (Bazaluk et al., 2020). One of the main reasons for this increased demand is the perception that organic food is more environmentally friendly and healthier than food that is produced in conventional way (Brantsæter et al., 2017). According to data from 2018, organic agricultural land covers 71.5 million hectares and makes up 1.5% of the total agricultural land (BIO, 2019). As for the region with the largest areas of organic land, the first is Oceania with 36 million hectares (about half of the organic land), followed by Europe with 15.6 million hectares (22%), Latin America 8 million hectares (11%), Asia 6.5 million hectares (9%), North America 3.3 million hectares (5%), while Africa is at the back with 2 million hectares (3%) (IFOAM, 2021). More and more producers are opting to switch to organic production, so in Estonia in the period from 1999 to 2004 the number of organic producers increased 9 times (Ploomi et al., 2006). The expected growth rate of organic agriculture is 20-30% worldwide and given the fact of growing world population the demand for organic products will only grow from year to year (Panhwar, 2004). However, the demand for organic products varies from country to country and in some countries even stagnates. In Norway, demand for organic food increased slightly between 2000 and 2013, despite plans by the former Norwegian government to have 15% of whole food consumption by 2020 as an organic origin (Vittersø & Tangeland, 2015).

Profitability is greatly influenced by the amount of costs, since they represent an important item in calculating business results and profits. Namely, high revenues can be annulled if there are high expenses or costs. When it comes to the amount of costs, it differs between conventional and organic food. In conventional production, more money is spent on chemicals, while in organic production more is spent on mechanical tillage and land conversion. The advantage of organic production is potentially higher profitability due to possibly lower production costs by eliminating the use of artificial fertilizers and preparations and higher selling prices of organic products (Pardo et al., 2014). Reduced use of the product influence on cost reduction of chemicals, but on the other hand, the cost of fuel, depreciation of machines and replacement of parts, labor costs and similar increases. Therefore, some authors believe that the amount of costs is approximately at the same level in both

conventional and organic production, but the cost structure differs (Delbridge et al., 2013). In the case of transition to organic production from conventional, the high conversion costs, as well as additional labor costs, occurs. In organic production, labor costs are higher due to the larger number of workers that is required by this production. Elimination the use of weed control remedy, more mechanical tillage is required and that requires a larger number of workers. According to the European Commission, for every 40 hectares of organic land, one worker is needed, compared to 46 hectares of conventional land. The similar situation is with dairy farms, where one worker is need for 17 dairy cows at organic farm, while at conventional farms one worker is need for 21 dairy cows. The conversion period is the time required for the land to adapt to organic production, to be cleaned of pesticides and other pollutants, and for the crops to acquire resistance to various types of diseases without the use of chemicals. The transition to organic production may also require the purchase of new machines and mechanization, which causes additional costs. The conversion period itself is one of the main obstacles to the transition to organic production because during that period the yields and quality of organic products are reduced and profitability is low or even negative (McArtney & Walker, 2004). Therefore, the decision to switch from conventional to organic production is greatly influenced by the economic strength of producers, so it is not surprising that small farms in the US find it harder to decide to transit to organic production (Delbridge, 2014). Farm size and technical efficiency play a very important role in making a conversion decision. Thus, some authors state that efficient farmers, who manage large farms, will sooner and faster make the decision to convert to organic production in relation to those who manage smaller farms (Latruffe & Nauges, 2014). The other authors disagree with these views and believe that small farms can hardly achieve economies of scale, so they opt for organic production (McBride & Greene, 2009). As one of the reasons, they also state that the transition to organic production increases the volume of work, so that there is a need to employ additional labor, which discourages large farms from switching to organic production. Ecological systems are more intensive and therefore require more knowledge and a more trained workforce which implies additional training and more time to perform and manage activities (Barkley, 2002). Therefore, a great commitment and desire of management for training, is necessary in order to make a successful transition to organic production and meet stricter criteria related to the quality and safety of organic products.

Another of the important aspects is productivity or yields and they are, as already pointed out, lower in organic production compared to conventional. Thus, in dairy cows' milk yields are lower by 9-30% in organic production and in terms of livestock breeding by 20-40% lower compared to conventional production (Shadbolt et al., 2005). In New Zealand, yields per hectare in the livestock industry are estimated to be 5-10% lower in organic compared to conventional production (Christensen & Saunders, 2003). Also, in 4 out of 5 cases

organic farms are less productive than conventional ones and the yields are about 20% lower (Lakner & Breustedt, 2017). However, on the other hand, during the 1990s sales prices in organic milk supermarkets were more 50-75% than regular milk (Glaser & Thompson, 2000), and in 2004 almost 100%, with a tendency of further growth (Dimitri & Venezia, 2007). Also, since the demand for organic products is higher than the existing supply, organic producers receive premium prices and high subsidies from the state in order to increase production (Dimitri & Oberholtzer, 2005). Premiums for organic milk in Europe vary from country to country and range from 8-36% while the prices of organic beef are on average 20-30% higher than conventional (Offermann & Nieberg, 2000). As for the plant crops in Europe, organic wheat is 50-200% more expensive than conventional. The amount of premiums and sales prices depends on the willingness of consumers to pay more for the organic product, as well as the available sales channels to producers of organic products. In that way, organic producers compensate lower yields with a higher selling price and subsidies, and in the end, they usually make higher profits than conventional producers. As for the premiums that organic producers receive from the states, they are also important and affect profitability, but even if they were reduced, organic farms would operate more profitably than conventional ones (Sanders et al., 2008). Of course, if the subsidies were reduced, it would also reduce to some extent the profitability of organic farms, but it would not endanger their business and survival. However, in the absence of premium prices and subsidies for organic production as in Thailand, producers would prefer to reorient to conventional production due to higher yields and only a small amount of organic products would be grown for their own needs (Rattanasuteerakul & Thapa, 2012). Yields largely depend on the ability of management to adopt new techniques for farm production and management, and they can sometimes be higher in organic than in conventional ones (Gibbon & Bolwig, 2007). Organic production can be used to develop rural areas that are suitable for certain organic crops. Thus, some authors state that 91% of the EU territory consists of rural areas where about 56% of the total EU population lives (Brugarolas et al., 2010). Therefore, the EU actively supports the development of organic production in order to facilitate the development of rural areas and raise the living standards of the population in those areas.

The group of authors (Shadbol et al., 2009) conducted research in New Zealand covering the period from 5 years during which they compared production costs and profitability between organic and conventional milk production. The results showed that organic milk production recorded higher production costs but also similar profitability as conventional milk production thanks to subsidies from the state and higher selling price of milk. Unlike the previous research, the results obtained by another group of researchers show that the profit is lower in organic compared to conventional production, and that is lower by 7-10% in the sample of 4.2 million farmers in Brazil (Froehlich et al., 2018). Researchers who investigated organic and conventional vegetable

production in Pakistan agree with these researchers and conclude that conventional vegetable production is more profitable than organic (Shah et al., 2013). However, these researchers state that there are insufficient visible benefits in organic production, such as less soil pollution and reduced risks to human health due to the elimination of pesticide use. This view is partly supported in the research that compared the profitability of conventional and organic farms in Minnesota in the USA in the period from 2000 to 2003 (Canavari et al., 2007). In the mentioned research, has been established that conventional farms have higher annual incomes, specifically that the average net income for 4 years is 27,775 dollars for organic farms, while it is 35,276 dollars for conventional farms. Regarding the profitability indicator, the ROA for organic farms is 5.9% and for conventional farms 5.8%, while the ROE is 4.8% for organic and 5.1% for conventional farms. With the previous authors, based on the results obtained on a sample of 31 organic and 99 conventional farms in the period from 2008 to 2013, do not agree authors of research conducted in 2017 (Brožová & Beranová, 2017). The mentioned researchers calculated individual ROA (return on asset) and ROE (return on equity) indicators and determined that they are more favorable for organic farms compared to conventional ones, means that organic production is more profitable than conventional production. The Nemes agrees with the previous authors. He used a sample of about fifty different case studies mainly from the USA and a dozen from developing countries (Nemes, 2009). This author states that organic farms are more profitable than conventional ones due to lower production costs, higher prices of market products and subsidies, but that conventional farms have greater support from countries for research and expansion of production. The group of authors who believe that organic farms are more profitable than conventional ones also include the authors (Offermann & Nieberg, 2000) who state that yields per hectare in organic farms are lower (30 to 40% for cereals in Europe), but thanks to higher selling prices (50 to 200% for cereals and even 50 to 500% for potatoes) they make much higher profits. These authors state that in all studies organic farms were more profitable, except in one study conducted in Italy, and that the difference in profitability varies from country to country and due to different amounts of subsidies for organic and conventional farms. The results of research conducted in two different areas in India showed that in one area organic production is more profitable in relative to conventional production except for onions (Patil et al., 2014). In another area, the results showed that profitability is similar in both organic and conventional production, but profits in traditional crops, such as coconut and cotton, are higher in organic production. According to these authors, as far as the risk of failure is concerned, organic production has an advantage due to lower input costs, so the financial risk is therefore lower. The group of authors has assessed the profitability of organic and conventional olive producers in Greece taking into account a large number of factors (Tzouvelekas et al., 2001). The mentioned authors state that although the average premium price for organic olive oil is 20% and the subsidy is 15%, the average income of organic producers is 3% lower than the conventional ones due to

lower yields of about 29%. However, on the other hand, the costs on organic farms are about 11% lower than the conventional ones due to lower labor costs as well as the costs of fertilizers and pesticides. Finally, the gross income of organic farms is 1,020 Greek drachmas on 0.1 hectares, while conventional producers make a loss of 8,940 Greek drachmas on 0.1 hectares. Research related to organic and conventional chicken production and profitability assessment was conducted in Turkey. The authors (Cobanoğlu et al., 2014) calculated that organic chicken production is 70-86% higher than conventional due to higher labor, food and certification costs. However, the high costs of producing organic chicken meat are annulled by sales prices that are twice as high for organic compared to conventional chicken meat. Lastly, it comes to the data that the net income per kilogram of chicken meat is 0.75 euros compared to 0.27 euros for conventional, which is 180% more. Based on that, it was concluded that the production of organic chicken meat is more profitable than the conventional one. These authors suggest that the costs of production be influenced as much as possible in order to be lower, so that the selling price would be more accessible to consumers of organic meat. A similar study was conducted in the Netherlands where was performed comparison of profits between organic and conventional chicken production (Bokkers & De Boer, 2009). The results showed that conventional production achieved higher productivity of 70,000 compared to 16,000 chickens, but it also increased the total production costs by 689,000 euros compared to 265,000. This has led to higher profits from organic production of 73,000 euros compared to 7,000 euros from conventional production. However, the mentioned authors state that consumers in the Netherlands mostly buy parts of chicken, not the whole ones, so one part of chicken meat will have to be processed and exported, most likely as conventional meat, which will certainly reduce the general profit of organic chicken producers. Nevertheless, the results of this research confirm that the production of organic chicken meat is still more profitable than the conventional one.

The situation with the COVID-19 pandemic has undoubtedly intensified stress and led to managers, as well as the majority of the population, being genuinely concerned about their own health and the health of their families, in addition to professional problems and difficulties (Čolović, et al., 2022). Due to the fact that managers and executives are directly and daily exposed to monitoring economic indicators, their stress level is very high and they are constantly faced with a large number of crisis situations of varying severity, which need to be resolved and decisions need to be made, sometimes in a very short time. Some of the possible ways to perceive and resolve a crisis that occasionally occurs, when economic indicators begin to be inadequate, are different ways of denying and escaping the crisis, through the mechanisms encountered in adult developmental crises, such as: escape denial mechanism and denial mechanism with overcompensation (Čolović, 2014; Čolović, 2017; Čolović & Stojković, 2017; Čolović et al., 2020; Milošević & Čolović, 2019). In specific economic circumstances, an escape denial mechanism would involve a tendency for managers to deny the existence of

a problem and decline-inconsistency of economic indicators. They usually achieve this by completely denying the whole situation, simply not accepting a realistic assessment, focusing on something else - other aspects of work, taking on additional activities and responsibilities, trying to start new projects and business ventures. Also, they can reorient themselves towards other spheres of their functioning beside professional ones and create additional obligations for themselves, in order to think less about the real dangers in business that are happening. These can be situations of different engagements in the family sphere, with friends, practicing different hobbies, recreational trips, enrolling in a certain sport and the like (Milošević & Čolović, 2019). Another way of denying the real situation that is encountered in adults is the mechanism of denial with overcompensation. If a person reacts in this way, he or she also denies the crisis, but instead of actively looking for ways to occupy themselves with other activities, he or she overestimates own abilities and possibilities, reduces the importance of real indicators and the danger of their effect on business. It often happens that a person contacts old business partners, arranges business meetings in order to reinforce own competence and feeling of omnipotence (Čolović & Stojković, 2017; Čolović et al., 2020).

Any of these mechanisms – escape denial or overcompensation denial – can help a person reduce the effects of primary shock and stress in the short term. Through the first explained mechanism, by drawing attention to other aspects of life or business the person will be able to gather enough strength and mobilize internal and external resources at his disposal (reorganize his experience, contact people he thinks can help him), while through the second mechanisms – overcompensation, the person will also temporarily divert attention from the crisis, but at the same time will focus on raising their own self-esteem, self-confidence and sense of security and strengthening personal competencies. Certainly, a person cannot deny the crisis in the professional world for a long time and, sooner or later, she or he will have to switch to one of the remaining two possible ways of dealing with sudden and sudden consequences – decompensation or creative and successful coping with the crisis. Decompensation is the worst possible solution and outcome of any crisis, because it causes complete unproductiveness. The person is fully aware of the situation, even exaggerates and catastrophes it, often feels totally lost, incompetent, unprepared to deal with problems. There is an increase in feelings of depression or anxiety, which are often intertwined, so that the person becomes completely dysfunctional, both professionally and often on all other levels of functioning (Čolović, 2014; Čolović & Stojković, 2017). The most optimal way to overcome the crisis is to act proactively. It is manifested through creative and successful coping with the crisis. After the initial shock, the person is able to actually see the real situation, perceive all its characteristics, conduct some kind of SWOT analysis of the problem – identify all the advantages and less, opportunities and threats that may arise. After that, managers will be able to make an adequate strategy for overcoming the problematic

situation, well-planned all steps (short-term goals) in the process and with a strong sense of personal value and competencies start to meet all set goals. Also, if necessary, due to the increase of self-esteem and self-confidence, the person will be able to see the whole situation from a totally new angle, notice some originally peripheral element, which may actually be the key to the solution – or use own creative potential in many others different ways (Čolović, 2014; Čolović & Stojković, 2017).

Literature data show that the gender and personality type increase the chance to react in a certain way in a situation of encountering a crisis that needs to be overcome. Thus, introverts and women are mostly susceptible to decompensation and the mechanism of denial with escape, while extroverts and men mostly defend themselves from problems by denying with overcompensation or directly approach dealing with situation and problem and solve them in a creative and successful way (Čolović, 2014). However, it does not necessarily mean that belonging to a certain gender or personality type will completely determine the way a person reacts in a critical and crisis situation, it will only increase the probability of that. Circumstances of the whole situation, previous experiences, as well as the plans that a person has at a given moment, will also play a big role in choosing some of the strategies that are available to an adult in overcoming crisis situations (Milošević & Čolović, 2019).

### 3. Research methodology

The main goal of the research is to compare and determine the profitability between organic food producers and conventional food in order to determine which type of production is more profitable for producers. The comparison was made on the basis of global (synthetic) indicators of ROA (return on assets) and ROE (return on equity). Also, a comparison of profitability is made between the years before the outbreak of the global COVID-19 pandemic and during the current pandemic.

The identification of possible ways that are available to managers which are facing the global crisis, or strategies that each of them could be implement in order to overcome the business crisis caused by the pandemic, are also discussed and analyzed in detail in this paper.

The final sample in the study consisted of 75 companies engaged in the production of organic food and 75 engaged in the production of conventional food in Serbia. Since a larger number of companies are engaged in conventional production than organic, not everyone has been analyzed in order to make the sample, as uniform and representative, as possible. Also, companies that did not have complete financial reports for the observed period were excluded from the original sample. The research covers the period from 2016 to 2020, i.e., 75 observations. The current and previous years could not be analyzed because the financial reports have not been published on the official APR website yet. In calculating financial indicators, financial reports taken from the

website of the Business Registers Agency were used. Research hypotheses have been set that will be tested:

1. Return on assets (ROA) is higher for organic food producers (X1);
2. Return on equity (ROE) is higher in organic food producers (X2);
3. There is a tendency to increase ROA and ROE in organic and conventional food producers (X3);
4. ROA and ROE in organic and conventional food producers decreased after the outbreak of the pandemic (X4).

#### 4. Results

The calculation of profitability indicators was performed by comparing the corresponding positions from the balance sheet and income statement. In the calculation of ROA (return on assets), the total assets with operating profit were compared, while in ROE (return on equity) the ratio between net profit and equity was observed.

**Table 1.** ROA results for organic and conventional food producers

	2016	2017	2018	2019	2020	Average
Organic food	5.82	2.25	0.42	0.42	9.56	3.69
Conventional food	2.88	2.27	4.64	7.87	10.12	5.56

Source: Authors

The results summarized in the previous table show that the ROA for the observed period of 5 years (2016-2020) is higher in conventional food producers compared to organic producers. The average value of ROA for organic food producers is 3.69, while for conventional food producers it is 5.56, which is why the first hypothesis (X1) was not confirmed since the ROA value is higher in conventional food production. The results also show that in the production of organic and conventional food, the value of ROA is at a satisfactory level, which means that there is a good relationship between operating income and assets used to realize them. The results of the research are in accordance with (Froehlich et al., 2018; Shah et al., 2013; Canavari et al., 2014; Tzouvelekas et al., 2001; Patil et al., 2014; Brožová & Beranová, 2017; Nemes, 2009; Shadbol et al., 2009) according to which in organic production ROA higher.

Another global indicator on the basis of which comparisons were made between organic and conventional food producers is ROE, which shows how much equity has been fertilized, ie how much capital has increased compared to the previous year.

**Table 2.** ROE results for the observed period

	2016	2017	2018	2019	2020	Average
Organic food	2.66	3.08	6.75	10.12	7.50	6.02
Conventional food	5.53	5.60	5.64	3.04	8.11	5.58

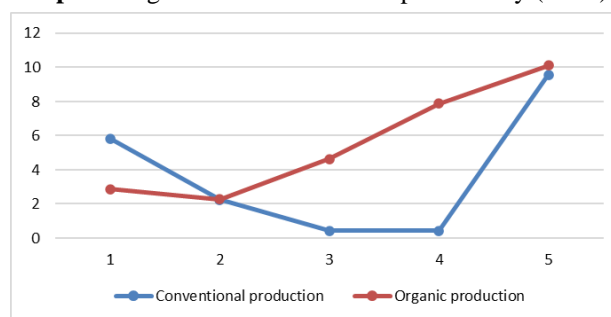
Source: Authors

Unlike the previous indicator of business profitability, in terms of ROE, the values of this indicator are higher for organic food producers compared to conventional food producers (Table 2). The average value of ROE for the observed period in organic food producers is 6.02, while

in the conventional 5.58, which confirms the second hypothesis (X2) that ROE is higher in organic food production. Based on this, it can be concluded that the fertilization of equity in both organic and conventional food is at a satisfactory level, with somewhat higher in organic food producers.

The obtained results are in accordance with the results of research in the Netherlands (Bokkers & De Boer, 2009), Turkey (Cobanoglu et al., 2014), Greece (Tzouvelekas et al., 2001), India (Patil et al., 2009) according to which ROE is higher in organic food production. The obtained results are not in line with the results of research in Brazil (Froehlich et al., 2018), Pakistan (Shah et al., 2013) and the USA (Canavari et al., 2007) whose results show that ROE is higher in conventional food production. Observing profitability in the long run shows how promising the company is, ie what business results can be expected from that company in the future. Regarding ROA for organic food producers, the highest value of this indicator is at the end of the analyzed period, ie in 2020, while the lowest is in the middle of the analyzed period (2018 and 2019). When it comes to conventional production, there is a constant trend of growth of this indicator and the best results are at the end of the analyzed period.

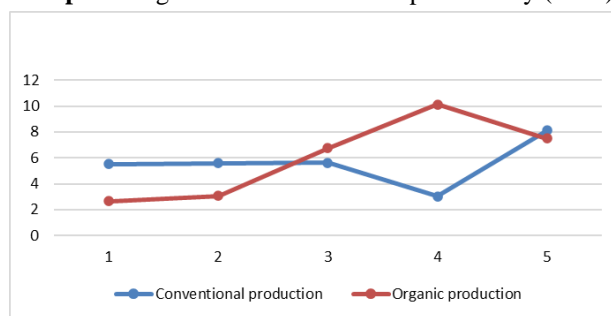
**Graph 1.** Organic and conventional profitability (ROA)



Source: Authors

During the analyzed period, ROE in organic food producers has the highest value in 2019 and 2020, which means that it has a tendency to grow. When it comes to the production of conventional food, the value of ROE is also the best in the last year of the observed period.

**Graph 2.** Organic and conventional profitability (ROE)



Source: Authors

Based on the above, it can be concluded that there is a tendency to increase the observed economic indicators of profitability of organic and conventional food producers,

which confirms our third hypothesis (X3) (Graphs 1 and 2).

The outbreak of the COVID-19 pandemic has greatly changed the business in many industries and this is certainly reflected in the profitability of companies. Interestingly, the profitability of organic and conventional food producers is higher in the period during the pandemic compared to the period before the outbreak of the pandemic. This means that companies have done well and adapted to doing business during the pandemic and in a short time have developed good strategies in response to it, and therefore profitability is at a higher level compared to the period before its outbreak. The obtained results show that the profitability is higher in the period of the pandemic compared to the period before the pandemic, since the profitability of organic and conventional food production is the highest in 2019 and 2020. This confirms our fourth hypothesis (X4).

## 5. Conclusion

Profitability is one of the most important economic indicators when it comes to companies and shows how efficiently companies use assets to make a profit. In organic food producers, the ROA is lower compared to conventional producers, while it is different when it comes to ROE, which is higher in organic than in conventional production. Organic as well as conventional producers have a tendency to grow when it comes to profitability indicators, which means that they use their total and own assets more efficiently in business. The profitability of organic and conventional food producers is higher during the COVID-19 pandemic compared to the period before the pandemic. One of the possible reasons is the fact that people spend more money on food to improve their immunity and be more resistant to the virus.

Given that the market for organic food is growing steadily, it is naturally to be expected that companies that have decided to produce this type of food, in the future, will make even higher profits and have better economic indicators. Conventional food producers need to make the right use of the profits they made and invest capital in appropriate machinery and technology to increase yields and still remain competitive with others organic food producers. Since the prices of organic food are higher than conventional ones, the only way to match them in profitability is to increase the level of yield compared to organic producers. The COVID-19 pandemic has shown that all companies should be always ready for new challenges and able to quickly adapt to business changes. Companies that are not ready for that, could suffer from large financial losses that can lead to their bankruptcy and most often that's what will happen. Organic and conventional food producers should consider investing additional capital to procure additional machinery and equipment to automate, modernize and accelerate the production process. This should reduce dependence organic and conventional food producers on the people workforce in the event of new pandemics. Also, it would help the managers themselves who are in charge and need

to control the production level in terms of non-declining production, as well as the health of their workers.

Also, if there is a decline in business due to the pandemic, or the inability to adequately respond to all the challenges it brings, managers and executives of companies are under great pressure. From their previous experiences and ways of dealing with business problems, but also the assessment of the current situation, will depend on how they will cope with the crisis - how to overcome it and possibly manage to find the right path and way to adjust their own business or if that is not possible restart it from scratch and return competitive to the market. The results of this research, both economically and psychologically, can be used as a starting point when making decisions about starting food production by companies and entrepreneurs. Given the fact that the managers are the first people hit by the crisis and that they are suffering from the highest level of stress if any business problems occurs, the considered and analyzed psychological factors can provide a good guideline in the way how to behave if the business crisis appears. The worst thing managers can do is get depressed and overwhelmed with feelings of helplessness (derealization) or choose some of the mechanisms of denial (with escape or overcompensation), which are certainly usual and common reactions for most people in the situation of facing a business crisis. A clear awareness that these first reactions are completely normal for all people will enable them to better cope with the crisis without feelings of guilt and remorse for their own inadequacy and personal incompetence. Without the feeling of paralysis, numbness, helplessness that always results from the three mechanisms of overcoming the crisis, or at least with their shorter duration, managers can reprimand their own resources, gather strength, contact different people who would help them in a different way and provide other types of social support, which present the most optimal way to overcome the crisis – that is, creative and successful coping with the crisis. In short, knowing all the usual mechanisms for overcoming life crises and accepting them as completely normal and common for many people, helps managers to cope faster, more efficiently and better with business problems that may arise, especially in situations of big business crisis, such as COVID-19 pandemic.

Subsequent research can be extended to neighboring countries to determine the profitability of their companies engaged in the production of organic and conventional food and compare with our producers. Also, liquidity and some other economic indicators of companies, as well as possible new ways of overcoming business crisis, before and during the current pandemic can be examined. The limitation of the research may be a relatively small number of producers of organic food compared to conventional ones, so in order to unify the sample, not all producers of conventional food in our country were taken into account. Given the fact that there are many more conventional food producers, as a criterion in making a choice in those that will be compared with organic, the amount of income they generated could be used. In that way, we try to make pairs of organic-conventional

producers as adequate as possible, so that the results would be as valid as possible.

## References

- Bayramoglu, Z. & Gundogmus, E. (2008). Cost efficiency on organic farming: a comparison between organic and conventional raisin-producing households in Turkey. *Spanish Journal of Agricultural Research*, 6(1), 3-11. <https://doi.org/10.5424/sjar/2008061-289>
- Barkley, A. (2002). *Organic food growth: Producer profits and corporate farming*. Risk and Profit Conference 2002. Kansas: Kansas State University.
- Bazaluk, O., Yatsenko, O., Zakharchuk, O., Ovcharenko, A., Khrystenko, O., & Nitsenko, V. (2020). Dynamic Development of the Global Organic Food Market and Opportunities for Ukraine. *Sustainability*, 12(17), 1-19. <https://doi.org/10.3390/su12176963>
- BIO, A. (2019). Organic Farming and Market in the European Union. *International publications by Agence BIO*, 4-11.
- Birknerová, Z. & Čigarská, B. N. (2021). Analysis of the Links between Burnout Syndrome and Coping Strategies in Trade Managers. *International Journal of Organizational Leadership*, 2021, Volume 10, Issue 2, 140-154. <https://doi.org/10.33844/ijol.2021.60522>
- Bokkers, E. A. M., & De Boer, J. M. (2009). *Economic, ecological, and social performance of British Poultry Science*, 546-557. <https://doi.org/10.1080/00071660903140999>
- Brantsæter, A. L., Ydersbond, T. A., Hoppin, J. A., Haugen, M., & Meltzer, H. M. (2017). Organic Food in the Diet: Exposure and Health Implications. *Annu Rev Public Health*, 295-313. <https://doi.org/10.1146/annurev-publhealth-031816-044437>
- Brožová, I., & Beranová, M. (2017). A Comparative Analysis of Organic and Conventional Farming. *Agris on-line Papers in Economics and Informatics*, 3-15. <https://doi.org/10.7160/aol.2017.090101>
- Brugarolas, M., Martinez-Carrasco, L., Bernabeu, R., & Martinez-Poveda, A. (2010). A contingent valuation analysis to determine profitability of establishing local organic wine markets in Spain. *Renewable Agriculture and Food Systems*, 35-44. <https://doi.org/10.1017/S1742170509990202>
- Bryan, A., & Tsai, T. (2020). Health Insurance Profitability During the COVID-19 Pandemic. *Annals of surgery*, 273(3), 88-90. <https://doi.org/10.1097/SLA.0000000000004696>
- Canavari, M., Ghelfi, R., & Rivaroli, S. (2007). A Comparative Profitability Analysis of Organic and Conventional Farms in Emilia-Romagna and in Minnesota. *Organic Food*, 31-45. [https://doi.org/10.1007/978-0-387-39582-1\\_3](https://doi.org/10.1007/978-0-387-39582-1_3)
- Christensen, V., & Saunders, C. (2003). Economic Analysis of Issues Concerning Organic Dairy Farming. *Research Report*, No 257, 5-46.
- Cobanoglu, F., Kucukyilmaz, K., Cinar, M., & Bozkurt, M. (2014). Comparing the Profitability of Organic and Conventional Broiler Production. *Revista Brasileira de Ciência Avícola*, 16(1), 89-95. <https://doi.org/10.1590/S1516-635X2014000100013>
- Čolović, M., & Mitić, V. (2021). Determinant factors influencing organic foods purchase. *Acta agriculturae Serbica*, 26(51), 89-95. <https://doi.org/10.5937/AASer2151089C>
- Čolović, M., Mitić, V., Nikolić, M., & Milojković, D. Occupational Safety as One of the Important Factors of Professional Satisfaction and Stress in Regular Conditions and During the COVID-19 Pandemic, *Handbook of Research on Key Dimensions of Occupational Safety and Health Protection Management*, pp. 122 - 143, IGI Global, United States of America, 2022. <https://doi.org/10.4018/978-1-7998-8189-6.ch006>
- Čolović, M., Gadžić, A., Ilić, R., & Petrović, M. (2020). Physical activity as one of the most optimal ways of active fatigue elimination and overcoming midlife crisis. *Facta Universitatis. Series: Physical Education and Sport*, 18(1), 239-247. <https://doi.org/10.22190/FUPES190630021C>
- Čolović, M., & Stojković, M. (2017). Midlife crisis – external manifestations and internal changes. *Teme*, 42(2), 315-336. <https://doi.org/10.22190/TEME1702315C>
- Čolović, M. (2017). Kriza srednjih godina u savremenoj Srbiji. *Glasnik Antropološkog društva Srbije*, 52(1-2), 125 - 132. <https://doi.org/10.5937/gads52-14534>
- Čolović, M. (2014). Načini ispoljavanja krize srednjih godina, osećanje smisla života i oblici usklađivanja porodičnih i profesionalnih uloga u Srbiji *Doktorska disertacija*. Niš: Filozofski fakultet u Nišu.
- Colom-Gorgues, A. (2009, April). The Challenges of Organic Production and Marketing in Europe and Spain: Innovative Marketing for the Future with Quality and Safe Food Products. *Journal of International Food & Agribusiness Marketing*, 166-190. <https://doi.org/10.1080/08974430802589675>
- Delbridge, T. A. (2014). Profitability and adoption of organic agriculture: essays on the decision to transition, *Doctoral dissertation*.
- Delbridge, T. A., Fernholz, C., King, R. P., & Lazarus, W. (2013). A whole-farm profitability analysis of organic and conventional cropping systems. *Agricultural Systems*, 1-10. <https://doi.org/10.1016/j.agsy.2013.07.007>
- Devi, S., Warasniasih, N.M.S., Masdiantini, P. R., & Musmini, I. S. (2020). The Impact of COVID-19 Pandemic on the Financial Performance of Firms on the Indonesia Stock Exchange. *Journal of Economics, Business, and Accountancy Ventura*, 23(2), 226 - 242. <https://doi.org/10.14414/jebav.v23i2.2313>
- Dimitri, C., & Oberholtzer, L. (2005). Market-led growth vs. government facilitated growth: Development of the U.S. and EU organic agricultural sectors. *International Agriculture and Trade Outlook*, 2-26.
- Dimitri, C., & Venezia, K. M. (2007). Retail and consumer aspects of the organic milk market. *Livestock, Dairy, and Poultry Outlook*, 2-18.
- Froehlich, A. G., Melo, A. S., & Sampaio, B. (2018). *Comparing the Profitability of Organic and Conventional Production in Ecological Economics*, 307-314. <https://doi.org/10.1016/j.ecolecon.2018.04.022>
- Gibbon, P., & Bolwig, S. (2007). The Economics of Certified Organic Farming in Tropical Africa: A Preliminary Assessment. *DIIS Working Paper 2007*.
- Glaser, L. K., & Thompson, G. (2000). Demand for organic and conventional beverage milk. *Journal of Agricultural and Resource Economics*, 729-730. <https://doi.org/10.22004/ag.econ.36346>
- Guesmi, B., Serra, T., Kallas, Z. & Gil Roig, J.M. (2012). The productive efficiency of organic farming: the case of grape sector in Catalonia. *Spanish journal of agricultural research*, 10(3), 552-566. <https://doi.org/10.5424/sjar/2012103-462-11>
- Hope, O., Saidu, M., & Success, A. (2020). Coronavirus Pandemic Outbreak and Firms Performance in Nigeria. *Management and Human Resource Research Journal*, 9(4), 15-25.



- Huang, L., Yang, J., Cui, X., Yang, H., Wang, S. & Zhuang, H. (2016): Synergy and transition of recovery efficiency of nitrogen fertilizer in various rice genotypes under organic farming. *Sustainability*, 8(9), 854: 1-14. <https://doi.org/10.3390/su8090854>
- IFOAM. (2020). The world of organic agriculture: statistics and emerging trends 2020. Research Institute of Organic Agriculture (FiBL) and IFOAM, *Organics International*.
- IFOAM. (2021). The world of organic agriculture: statistics and emerging trends 2021. Research Institute of Organic Agriculture (FiBL) and IFOAM, *Organics International*.
- Lakner, S., & Breustedt, G. (2017). Efficiency Analysis of Organic Farming Systems – A Review of Concepts, Topics, Results and Conclusions. *German Journal of Agricultural Economics*, 66(2), 85-108. <https://doi.org/10.22004/ag.econ.212025>
- Latruffe, L., & Nauges, C. (2014). Technical efficiency and conversion to organic farming: the case of France. *European Review of Agricultural Economics*, 227-253. <https://doi.org/10.1093/erae/jbt024>
- Lee, H. (2021). Changes in workplace practices during the COVID-19 pandemic: the roles of emotion, psychological safety and organisation support. *Journal of Organizational Effectiveness: People and Performance*, 97-128. <https://doi.org/10.1108/JOEPP-06-2020-0104>
- Lee, S., Nguyen, T. T., Poppenborg, P., Shin, H. J. & Koellner, T. (2016): Conventional, partially converted and environmentally friendly farming in South Korea: profitability and factors affecting farmers' choice. *Sustainability*, 8(8), 704: 1-18. <https://doi.org/10.3390/su8080704>
- Macias-Maldonado, A., Camacho-Alamilla, R., Torres, S. G. V., Alcaraz, J. L. G., & Limón, J. (2015). Determination of Burnout Syndrome among Middle and Senior Managers in Manufacturing Industry in Ciudad Juarez. *Procedia Manufacturing*, 3, 6459-6466. <https://doi.org/10.1016/j.promfg.2015.07.927>
- Macias-Velasquez, S., Baez-Lopez, Y., Maldonado-Macias, A., Limon-Romero, J., & Tlapa, D. (2019). Burnout Syndrome in Middle and Senior Management in the Industrial Manufacturing Sector of Mexico. *Int. J. Environ. Res. Public Health*, 16(8), 1467. <https://doi.org/10.3390/ijerph16081467>
- McArtney, S. J., & Walker, J.T.S. (2004). *Current Situation and Future Challenges Facing the Production and Marketing of Organic Fruit in Oceania*. <https://doi.org/10.17660/ActaHortic.2004.638.50>
- McBride, W. D., & Greene, C. (2009). The profitability of organic soybean production. *Renewable Agriculture and Food Systems*, 276-284. <https://doi.org/10.1017/S1742170509990147>
- Milošević, M., & Čolović, M. (2019). *Razvojna i pedagoška psihologija sa primenom u sportu i fizičkom vaspitanju*, Univerzitet Singidunum.
- Nemes, N. (2009). Comparative Analysis of Organic and Non-Organic Farming Systems: A Critical Assessment of Farm Profitability. *Food and Agriculture Organization of the United Nations (FAO)*. Retrieved from <http://www.fao.org/family-farming/detail/en/c/282591/>
- Offermann, F., & Nieberg, H. (2000). *Economic Performance of Organic Farms in Europe*. Organic Farming in Europe: Economics and Policy, V.
- Panhwar, F. (2004). Organic products, social qualities with equal and fair trade its constraint and future: why organic farming is necessary. City Farmer, *Canada's Office of Urban Agriculture*.
- Pardo, G., Martínez, Y., Perea, F., & Urbano, J. M. (2014). Economic Profitability Analysis of Rainfed Organic Farming in SW Spain. *Outlook on Agriculture*, 115-122. <https://doi.org/10.5367/oa.2014.0161>
- Patil, S., Reidsma, P., Shah, P., Purushothaman, S., & Wolf, J. (2014). Comparing conventional and organic agriculture in Karnataka, India: Where and when can organic farming be sustainable? *Land Use Policy*, 37, 40-51. <https://doi.org/10.1016/j.landusepol.2012.01.006>
- Ploomi, A., Luik, A., & Kurg, A. (2006). Why do organic farmers quit in Estonia? *International Conferences > 2006: Joint Organic Congress > Theme 2: European initiatives*. Retrieved from <https://orgprints.org/7810/>
- Prodanović, R. & Babović, J. (2014). Ekonomski pokazatelji u proizvodnji organskog voća. *Ekonomija, teorija i praksa*, 7(4), 21-35. <https://doi.org/10.5937/etp1404021P>
- Rattanasuteerakul, K., & Thapa, G. B. (2012, April). Status and financial performance of organic vegetable farming in northeast Thailand. *Land Use Policy*, 456-463. <https://doi.org/10.1016/j.landusepol.2011.09.004>
- Rožman, M. & Tominc, P. (2021). The physical, emotional and behavioral symptoms of health problems among employees before and during the COVID-19 epidemic. *Employee Relations*, 44(7), 19-45. <https://doi.org/10.1108/ER-10-2020-0469>
- Sanders, J., Stolze, M., & Lampkin, N. (2008). Impact of agricultural liberalisation on the relative importance of price premiums for the profitability of organic farming. *16th IFOAM Organic World Congress. Modena*.
- Shadbol, N., Kelly, T., Horne, D., Harrington, K., Kemp, P., Palmer, A., & Thatcher, A. (2009, October). Comparisons between organic & conventional pastoral dairy farming system: Cost of production and profitability. *Journal of Farm Management*, 31-45.
- Shadbolt, N., Kelly, T., & Holmes, C. (2005). Organic dairy farming: cost of production and profitability. *AFBM Journal*, 136-145. <https://doi.org/10.22004/ag.econ.123166>
- Shah, H., Rani, S., & Zahid, S. (2013). Profitability Analysis of Organic Cauliflower, Radish and Turnip Produce at National Agriculture Research Centre, Islamabad, Pakistan. *Asian Journal of Agriculture and Rural Development*, 929-935. <https://doi.org/10.22004/ag.econ.198320>
- Suvanmaneepong, S., Kerdsriserm, C., Lepcha, N., Cavite, J. C., & Liones, C. (2020, January). Cost and return analysis of organic and conventional rice production in Chachoengsao Province, Thailand. *Organic Agriculture*, 10(3), 369-378. <https://doi.org/10.1007/s13165-020-00280-9>
- Torres, J., Valera, L.D., Belmonte, J.L. & Herrero-Sanchez, C. (2016). Economic and social sustainability through organic agriculture: study of the restructuring of the citrus sector in the "Bajo Andarax" district (Spain). *Sustainability*, 8(9), 918: 1-14. <https://doi.org/10.3390/su8090918>
- Tzouvelekas, V., Pantzios, C. J., & Fotopoulos, C. (2001). Technical efficiency of alternative farming systems: the case of Greek organic and conventional olive-growing farms. *Food Policy*, 26(6), 549-569. [https://doi.org/10.1016/S0306-9192\(01\)00007-0](https://doi.org/10.1016/S0306-9192(01)00007-0)
- Vittersø, G., & Tangeland, T. (2015). The role of consumers in transitions towards sustainable food. *Journal of Cleaner Production*, 91-99. <https://doi.org/10.1016/j.jclepro.2014.12.055>

