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CREATING ADDED VALUE AS A STEP TOWARDS INCREASING SUSTAINABILITY IN GRAPE PRODUCTION SECTOR[5]

Abstract

Fresh grapes, or grape products are very often a part of daily meals, while grapes are economically among the most important agricultural products. Just growing grapes, or entering the wine production, choosing the right grapevine varieties according to occurred production and market conditions, usually it is not so easy to decide. In this paper, an economic analysis based on variable costs has been made, showing the possible way in value added creation at farm level in the national viticulture and winemaking. Gained research results show that grape processing into the wine is economically justified decision (there are observed wine production of Tamjanika Bela and Chardonnay grapevine varieties), as there are derived positive contribution margins. Even more practicing mentioned activity at the farm, namely the processing of grapes into wine could contribute from 5.4 to 12.4 times higher contribution margin compared to simple grape production.

Key words: *grapevine varieties, wine production, Serbia, contribution margin, value added creation.*

JEL: Q01, Q12, Q13

СТВАРАЊЕ ДОДАТЕ ВРЕДНОСТИ КАО КОРАК КА ПОВЕЋАЊУ ОДРЖИВОСТИ У СЕКТОРУ ПРОИЗВОДЊЕ ГРОЖЂА

Сажетак

Свеже грожђе, односно производи од грожђа су врло често саставни део дневне исхране, док се из угла економије грожђе налази међу најважнијим пољопривредним производима. Адекватан одабир одговарајућег сортимента винове лозе у складу са датим производним и тржишним условима, при самом гајењу

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грожђа, или током уласка у производњу вина, обично није ни мало лака одлука. У овом раду, урађена је економска анализа заснована на варијабилним трошковима, која приказује могуће начине стварања додате вредности на нивоу газдинстава унутар националног сектора виноградарства и винарства. Добијени резултати истраживања показују да је иницирање прераде грожђа у вино економски оправдана одлука (посматрана је производња вина од сорти Тамјаника бела и Шардоне), како су добијене позитивне марже покрића. Шта више, бављење поменутом делатношћу на фарми, односно прерадом грожђа у вино, могла би се остварити од 5,4 до 12,4 пута већа маржа покрића у односу на саму производњу грожђа.

Кључне речи: *сортимент грожђа, производња вина, Србија, маржа покрића, стварање додате вредности.*

Introduction

Considered economically, grapes belong to the group of the most important edible crops (basically fruits) grown worldwide. In last couple decades they are grown at over 7 million ha (Cantu, Walker, 2019; OIV, 2024). In globally organized grape production, in 2022, in average there was achieved the yield of slightly over 11 t/ha, or overall production of almost 80.1 million t of fresh grapes (OIV, 2022). As the grapes could be used in human consumption as fresh or in form of processed products (Kandylis et al., 2021). Meanwhile, it has to be mentioned that in last several decades, grape yields had expressed increase, primarily towards implementation of well-suited production mechanisms involving intensification in use of pesticides and planting of higher yielding varieties (Lopez Ruiz, 2024).

Incorporating the value-added concept in agriculture would contributes the growth of farms competitiveness, profitability and sustainability, no matter to practiced line of production (Clark et al., 2021). Not so often, it is a precondition of farm survival in contemporary global business ambient (Clark, 2020).

Focused to gained raw agro-product, it usually assumes different level of agro-products processing, starting from their cleaning, cutting, calibration and packaging, while offering in ready to made state to the final consumer (Rasul, 2002; De Corato, Cancellara, 2019), or pulling the products through the more demanding processing activity, as are pressing, squeezing, milling, drying, pasteurization and sterilization, freezing, pickling, fermentation, or preparing of certain food product furtherly offered to final consumers (Ghoshal, 2018; Kumari, Singh, 2018; Knorr, Augustin, 2021).

In such a way to raw agro-products are assigned the new use value previously required from the market. Carrying out the transfer of raw into the processed product farmer creates the value added affecting its overall profitability. In grape growing sector, excluding the simple mechanical cleaning, sorting and packing of the fresh grapes, value-added is usually linked to higher level of grapes processing, and production of raisins, grape juice and jams, different wine products and spirits, grape seed oil, etc.

Nowadays, wine production is the most common way of grape processing. It is estimated that almost 75% of the global grape production is pushed to the wine sector (Beres et al., 2017). It is followed by relevant volume of organic waste (by products),

primarily grape pomace, seeds, skin and part of stalks (they include up to 30% of the initially crushed grapes), that could be valuable inputs in further processing (Muhlack et al., 2018). It is considered that entire wine production in 2022. were almost 260 million hectoliters, having slight decrease in last few years (Grazia et al., 2023). Besides, the estimated value of global wine market at the beginning of current decade has been exceeded the 300 billion USD (Wagner et al., 2023), with prediction to exercise sharp growth in next five years to overall revenues of over 500 billion USD (Dudic et al., 2024).

In line to rich and well-balanced chemical composition of the grapes' nutrients (Deng et al., 2011; Aubert, Chalot, 2018), grape as the major input in wine making sector are approving several health benefits of wine consumption, such are prevention in cardiovascular disease, arthritis and diabetes, enables strong antioxidant activity that decreases cancer and dementia risks, it sharps cognitive functions and stimulates anti-aging processes and immune system, or increases longevity, or it balances cholesterol level, and enables better digestion, etc. (Shrikhande, 2000; German, Walzem, 2000; Higgins, Llanos, 2015).

Among the grape producers, as leaders could be underlined primarily China, followed by the France, USA, SAR and Italy. Globally respectable volume of production has also Chile and Argentina, or Spain and Turkey (Khan et al., 2020). On the other side, as the leaders in wine production, there is a dominancy of European countries, while next could be underlined Italy (with almost one fifth of the global production), France, Spain, USA, Australia, Chile and Argentina (Moro, 2023).

Considering some previous research, basically within the group of the main wine exporters are usually top producing countries, such are France, Italy, Spain, and Portugal, or Australia, New Zealand, Chile and Argentina. It is interesting that Austria has the role of the main wine re-exporter, while the group of countries that imports the most of available wine quantities due to expressed domestic wine consumption is usually represented by USA, China, UK, Germany, and Netherlands (Thome et al., 2023).

What is happening at the Serbian wine market? Serbia is living the wine production boom in terms of introducing new technologies and improving the quality of wine. Currently in Serbia operates 488 registered wineries, showing the growth trend in last several years. These wine producers produced 20.1 million liters of wine in 2023. Of the total amount of wine produced in 2023, 11.7 million liters were produced from domestic grapes, while 8.4 million liters were produced from imported/supplied raw materials, mainly from the North Macedonia (MAFWM, 2024). Although the number of wineries is increasing, wineries are usually in form of small family business, economically so weak to significantly expand the production in short period towards the growing market needs (Simonović et al., 2019).

Besides the visible progress in national wine sector in last two decades, it is still underdeveloped comparing the market capacities and available natural conditions for grape production. Sector requires general tech-tech modernization, products branding and differentiation, strategic approach in production and marketing, while it needs fresh investments and stronger state financial and administrative support, or specific education and intensive joining of current wine producers, etc. (Prodanović et al., 2020). The general issues linked to viticulture and winemaking sector in Serbia derived from intensive grubbing up of vineyards in last couple decades, as well as decrease in planting

of local varieties. In line to previously mentioned, Serbia stays without significant areas under local varieties, inducing in same time huge and steady loss in available genetic grapevine potential, impacting the state of national viticulture sector (Jakšić et al., 2019). So, although there are active state measures for planting of new vineyards, Serbia still missed enough vineyards to enable self-sufficiency of national grape and wine market. Mentioned is especially visible in growing and processing of autochthonous (local) grapevine varieties (Petrović et al., 2024).

Apart from the problems of preserving local grapevine varieties and planting vineyards with those varieties, in recent time, grape growers and wine producers in Serbia are facing certain negative climate change effects, such are temperature growth, heatwaves extension and lack of rainfalls in growing season, usually affecting the framework of phenological stages at grown grape varieties in many wine-growing regions at national level. So, grape growers are slightly forced to adjust established vineyards (selection of optimal grape varieties) to changed climate conditions, in order to secure satisfied level of grape, and further wine production (Vujadinovic et al., 2016). The current climate changes pose a particular challenge for future viticulture and wine production in Serbia. In the future, grape and wine producers will have to make an appropriate choice between commercial international varieties and autochthonous (old local) varieties that have adapted to the local ecological conditions in Serbia for centuries. This is of particular importance as some studies have shown that the quality parameters of grape musts and wines of certain autochthonous (old local) grapevine varieties have improved over time due to climatic changes that have a positive effect on their quality (Bradić et al., 2024; Ivanović et al., 2023). Despite some problems related to excessive heating in some already hot wine-growing areas, this increases the wine production potential due to the possibility of successfully cultivating vines in new areas, the gradual expansion of the most vacated areas, as well as the opportunity to introduce new grapevine late ripening cultivars in our region (Jaksic et al., 2023).

Although there are a huge number of grapevine varieties worldwide, only 300 to 400 of them are commercially important for global production (Nikolić et al., 2021). It is a general globalization of world wine production, but also a challenge in the future selection of varieties for each wine country, including Serbia. Serbia has on disposal diverse *terroir* conditions, while the overall wine-growing area is consisted from 3 large wine-growing units, 22 regions and 77 subregions (districts), so they constitute Wine-growing Serbia (Jakšić et al., 2015). Over 10% of overall number of farms are involved in grape growing (Balenović et al., 2021). In all wine-growing areas of Serbia, nowadays are produced 224 grapevine varieties towards commercial production of grapes and wine. Meanwhile, only 31 grapevine varieties are considered as local (autochthonous), (Jaksic et al., 2024). For this reason, Serbian grape and wine producers should pay attention to whether they will be planting vineyards with internationally recognized varieties or with autochthonous (local) varieties specific to individual wine-growing areas of Serbia in order to achieve better recognition on the market. Grape producers must also determine whether it is economically more profitable to process grapes into wine, considering the characteristics and quality of the grapes and wine from certain grapevine varieties.

The main goal of research was to assess the value of created value-added at grape growing farm, if the farmer transfers the produced volume of grape into the wine. Specifically, research has to perceive whether the farmer could boost its profitability and

economic sustainability, if he turns grown grapevine variety (autochthonous, i.e. local wine variety Tamjanika Bela, or international wine variety Chardonnay) into the wine as the final product.

Material and Methods

In order to evaluate the farm capacity to create value added in further food processing activities, specifically wine production, as in some previous researches there were used analytical calculations based on variable costs (calculation of contribution margin), and method for the determination of critical values of production. Contribution margin represents difference of gained incomes derived from wine selling and overall variable costs underlying wine production. On the other side, critical values of production represent the values of observed elements of production (price, yield and variable costs) that lead to equalization of contribution margin with zero (Jelocnik et al., 2013; Jeločnik et al., 2019; Jeločnik et al., 2020; Subić et al., 2022).

Research tempts to analyze the size of economic potential of selected grape grower in value added creation, if he enters the wine production with cultivated autochthonous (local) and commercial grapevine varieties (Tamjanika Bela - old local muscat variety for white wines, and Chardonnay - internationally widespread variety for white wines), instead of selling the harvested grape to the local wineries, i.e. on the local market. Derived research results should encourage the grape producers to accept the winemaking (especially based on autochthonous, i.e. local varieties), as the adequate tool for increasing business vitality and profitability. So, creating the value-added should gradually transfer their main activities (grape growing) to the level of processing (wine production).

Research implies the required data for analysis collected through the in-depth interview with grape producer (small family winery) located in the Tri Morave wine-growing region (Trstenik wine-growing subregion), the same one used in research (Jelocnik et al., 2024). Used data corresponds to production year 2023/24 (vintage 2023). All used inputs and derived results were presented tabularly in EUR. Meanwhile, observed costs and incomes are linked for the volume of wine gained form grapes produced at one hectare of vineyard (full yielding is assumed, while entire volume of produced grape will be in service of wine making). That way enables comparing the contribution margins gained in grape and wine production, or observing increase in overall gross financial result at specified farm. Research consults available scientific literature from the field of vine growing/wine production, and professional expertise.

There are few research limitations. Primarily it assumes economic analysis based on data only from one production cycle of the wine, organized at single locality. Besides, this is quite enough for perceiving the value-added creation in terms of grape processing at particular farm (mini winery). It has to be mentioned that in line to applied technological process, utilized equipment, level of implemented marketing approach and specific „final touch" brought to final product (general and quality category, as well as type of wine), derived research results could variate in regard to similar products gained by other wineries. As research limitation could be also considered general lack of similar economic analysis in national or regional scientific literature, that potentially disable comparability of derived research results.

Scientific and professional importance of performed research could be based on the fact of missing papers with specific but similar focus at national level. It could serve as certain agroeconomic (analytical) millstone for professionals, primarily grape growers and wine producers, policy makers and traders, as well as to scientific audience turned to observed field of agriculture.

Results and Discussion

As was mentioned, mini winery is settled in Trstenik wine-growing sub-region. Available vineyard covers a little more than 4 hectares. In production structure dominate white wine varieties, primarily globally recognized Chardonnay and autochthonous (local) variety Tamjanika Bela. Although most of the produced grapes are sold to local wineries, interviewed producer owns all required facilities and equipment used in winemaking, while farm members together with employed workers are technologically well-experienced.

According to growth in demand for high quality wines made from local varieties at regional market, economic analysis considers wine production of Tamjanika Bela compared to those produced from Chardonnay (demand for wines derived from local grape varieties exceeds the production of specified type of wine, as in line to CVO (2024) data there are just slightly over 300 ha under Tamjanika Bela in Serbia). Business moto of the observed wine producer is “quality over the quantity”, so wine production and maturing, bottled wine and its further storing deserves special attention. In line to predetermined marketing strategy, wine is later selling in original packaging (0.75 l bottles) to local wine stores and restaurants, as well as in the winery itself. Basically, previously assumed guaranties good income opportunity to observed winery.

Perceiving the potential profitability gained in wine production from both grapevine varieties (Tamjanika Bela and Chardonnay) corresponds to adequate matching of the occurred incomes and costs (Tables 1. and 2.). Surely, it has to be underlined that gained positive contribution margin does not necessarily reflects the profitability in wine making, while it is furtherly determined by the level of fixed costs underlying the observed production. Similarly, increase in contribution margin is favoring some of available production lines, but only if occurred fixed costs are equal for all of them.

In wine production are used stainless steel vessels (capacity of 2,000 l each). It is assumed that the wine production at both grapevine varieties is based under the same randman of acc. 65% (produced 65 liters of wine from 100 kilograms of grapes), what is in line to normative of good production practice. In other words, fresh grapes of variety Tamjanika Bela produced at one hectare (12 t) could be transferred into the 7,800 l of wine (i.e. 10,400 bottles), while at variety Chardonnay, 10 t of fresh grapes could be turned to 6,500 l of wine (i.e. 8,666 bottles), (Jelocnik et al., 2024). Incomes are based on wholesale price of wine bottle that could be achieved at local market for high quality wines without geographical indications (fairly traded price per bottle sold with a beautiful, high-quality designed label). Besides, the interviewed producer, i.e. farm, has not received any subsidies for the wine production. Income side of calculation shows slightly better results in case of Tamjanika Bela, primarily as a result of higher quantity of the produced grapes.

Table 1. Contribution margin in wine production (in EUR, production cycle 2023/2024., grapevine variety Tamjanika Bela)

A – Value of production				
Element	**UM**	**Quantity per UM**	**Price per UM**	**Total**
Wine (bottled)	0.75 l	10,400	6.00	62,400.00
Subsidies	-	-	-	-
Total incomes				**62,400.00**
B – Costs of production				
1. Direct costs of production	**UM**	**Quantity per UM**	**Price per UM**	**Total**
Fresh grapes	Kg	12,000	1.000	12,000.00
Annual preparation of vessels and used equipment (consumables and spare parts)	L	7,800	0.025	195.00
Enological means	L	7,800	0.038	296.40
Laboratory analysis of grape must (pH, sugar and acids content)	Psc	2	15.00	30.00
Laboratory analysis of wine (analysis on WineScan FOSS apparatus)	Psc	4	20.00	80.00
Laboratory analysis of wine (in accredited laboratory)	Psc	2	150.00	300.00
Supplies in the wine production	L	7,800	0.031	241.80
Renting of the cool storage (24 h)	Kg	12,000	0.012	144.00
Energy – electric power	Bottle	10,400	0.093	967.20
Water	Bottle	10,400	0.014	145.60
Labor – wine production	L	10,400	0.270	2,808.00
Other costs	-	-	-	516.24
Total direct costs				**17,724.24**
2. Packaging costs	**UM**	**Quantity per UM**	**Price per UM**	**Total**
Glass bottle	Psc	10,450	0.650	6,792.50
Wine bottle stopper	Psc	10,450	0.164	1,713.80
Bottle cap	Psc	10,450	0.068	710.60
Etiquette	Psc	10,450	0.342	3,573.90
Cardboard box (for 6 bottles)	Psc	1,742	0.855	1,489.41
Labour – packing	Psc	10,400	0.050	520.00
Other costs	-	-	-	444.00
Total packaging costs				**15,244.21**
Total costs of production (1+2)				**32,968.45**
Contribution Margin (A - B)				**29,431.55**

Source: according to authors' calculation

Table 2. Contribution margin in wine production (in EUR, production cycle 2023/2024., grapevine variety Chardonnay)

A – Value of production				
Element	**UM**	**Quantity per UM**	**Price Per UM**	**Total**
Wine (bottled)	0.75 l	8,666	7.00	60,662.00
Subsidies	-	-	-	-
Total incomes				**60,662.00**
B – Costs of production				
1. Direct production costs	**UM**	**Quantity per UM**	**Price per UM**	**Total**
Fresh grapes	kg	10,000	0.85	8,500.00
Annual preparation of vessels and used equipment (consumables and spare parts)	L	6,500	0.025	162.50
Enological means	L	6,500	0.038	247.00
Laboratory analysis of grape must (pH, sugar and acids content)	psc	2	15.00	30.00
Laboratory analysis of wine (analysis on WineScan *FOSS* apparatus)	psc	4	20.00	80.00
Laboratory analysis of wine (in accredited laboratory)	psc	2	150.00	300.00
Supplies in the wine production	L	6,500	0.031	201.50
Renting of the cool storage (12 h)	kg	10,000	0.006	60.00
Energy – electric power	bottle	8,666	0.093	805.94
Water	bottle	8,666	0.014	121.32
Labour - wine production	L	8,666	0.270	2,339.82
Other costs	-	-	-	385.44
Total direct costs				**13,233.52**
2. Packaging costs	**UM**	**Quantity per UM**	**Price per UM**	**Total**
Glass bottle	psc	8,700	0.650	5,655.00
Wine bottle stopper	psc	8,700	0.164	1,426.80
Bottle cap	psc	8,700	0.068	591.60
Etiquette	psc	8,700	0.342	2,975.40
Cardboard box (for 6 bottles)	psc	1,450	0.855	1,239.75
Labor – packing	psc	8,666	0.047	407.30
Other costs	-	-	-	351.43
Total packaging costs				**12,647.28**
Total costs of production (1+2)				**25,880.80**
Contribution Margin (A - B)				**34,781.20**

Source: according to authors' calculation

On the other side, production of wine Chardonnay is burdened for around 27,4% lesser overall costs of production. Overall costs of production involve group of direct costs of production and costs related to packaging and logistic under the produced wine (could be assumed that both groups of costs are mutually balanced). In both calculations (Tables 1. and 2.) costs of fresh grapes are dominated within the structure of overall costs (although the grapes are produced at the farm, as a raw material used in wine production costs of grape are evaluated per current wholesale price at the local market), with 36.4 % at Tamjanika Bela, or 32.8 % at Chardonnay. They are followed by labor costs (involve both engagement of external (technologist/enologist) and internal (farm members) labor) that could be assumed as variable costs too (Subić, Jeločnik, 2016), or costs of bottles and etiquettes, etc. Besides, it should be mentioned that other costs represent costs of small repairs, certain taxes, or reservation for the costs of unexpected events which could potentially occur, while they are estimated as 3% of the total direct costs of production. As the quality of final product (wine) is among the highest producers' priorities, in each cycle of wine production there are done several laboratory analyses of grape must and wine in different stage of production. As like in grape production, farm is purchasing all inputs at the local market.

Although there are used different grapevine varieties in white wines production (Tamjanika Bela and Chardonnay), used technological approach at the farm has not significantly differed. Despite the fact of quite unfavorable weather conditions for grape production in vegetative season 2023/24 (vintage 2023), there has been achieved expected quality of produced wine (wine production prefers quality than quantity). Related to gained contribution margin, it is for around 18.2% higher in production of Chardonnay, what is mainly consequence of lower overall costs of its production.

Table 3. Critical values in wine production (grapevine varieties Tamjanika Bela and Chardonnay)

Description	Tamjanika Bela (in EUR/bottle)	Chardonnay (in EUR/bottle)
Expected production (EY)	10,400	8,666
Expected price (EP)	6.00	7.00
Subsidy (S)	-	-
Variable costs (VC)	32,968.45	25,880.80
Critical price: CP = (VC - S) / EY	3.17	2.99
Critical production: CP = (VC - S) / EP	5,495	3,697
Critical variable costs: CVC = (EY x EP) + S	62,400	60,662

Source: according to authors' calculation

In previous table (Table 3.) are shown critical values derived in wine production from both grapevine varieties. They represent the values of production parameters that leads to equalization of contribution margin with zero (Jeločnik et al., 2021; Subić et al., 2022). Contrary to grape production (Jelocnik et al., 2024), wine production from the grapes of Tamjanika Bela grapevine variety is more sensitive to possible production risks.

Summing the overall contribution margin gained in grape production at one hectare, and later their processing into the wine at the farm (Table 4.), there could be seen that initial contribution margin derived in basic agricultural production is enlarging for 6.4 times (in case of Tamjanika Bela), or for even 13.4 times (in case of Chardonnay) through the value adding to the grapes and their transfer, i.e. processing into the wine.

Table 4. Overall contribution margin gained in grape production and grape processing (grapevine varieties Tamjanika Bela and Chardonnay, in EUR)

Element	Tamjanika Bela (in EUR)	Chardonnay (in EUR)
Contribution margin gained in grape production at 1 ha*	5,395.00	2,800.00
Contribution margin gained in winemaking (from the grapes produced at 1 ha)	29,431.55	34,781.20
Overall contribution margin gained at the farm	34,826.55	37,581.20

Source: according to authors' calculation and * Jelocnik et al., 2024.

Considering the decision which variety has to be produced, or dominated within the production structure at the farm, if all produced grapes will go into the processing, sounds as somehow tricky question. Although the overall contribution margin is for 8 % higher in production of Chardonnay wine, that does not mean its favoritism at all costs. Before all, difference in gained contribution margins is relatively small. Secondly, observed locally, Chardonnay wine as widely recognized variety could be sold on the Serbian, as well on the international market. On the other hand, Tamjanika Bela wine represents a national „rising star" (even regionally), because the demand for this wine is high, so that the wine producers can sell these wines easily and quickly. At the end, growing and especially processing the grapes into the wine for both grapevine varieties could be considered as good business solution for the certain farm, much better than selling the fresh grapes.

Conclusions

Agri-food production is among the essential human activities, that tries to satisfy existential human need, nutrition. In this process farmers have to strive to implement as much as possible value added in food product they realize at the market. In this way they will secure increase in incomes, sustainability to farm, and certain level of prosperity to local community.

Globally grape is among the most valuable agricultural products. Its production is widely spread worldwide. Wine serves as the perfect alternative for value adding to fresh grapes at the farm level.

In paper was tried to economically assess the value of created value added in grape production sector regarding the processing of grapes into the wine. Processing of two white grapevine varieties was focused (Tamjanika Bela and Chardonnay), while wondering which variety has to be favorized by the producers, international wine variety or local (autochthonous) one. Derived results show that in both cases contribution margins are

positive, surely impacting the creation of value added at the farm level. Re-summing the contribution margins gained in grape production and further winemaking from the grapes obtained at the one hectare of vineyard, initial contribution margin achieved in grape production is increasing from over 6 to 13 times, depending on the grown, i.e. processed grapes of grapevine variety.

Deciding which grapevine variety has to be labeled as the winner is so hard, as both observed varieties at national level have the wining mentality. Chardonnay seems to be widely recognized and, in some moments, irreplaceable wine variety, while from Tamjanika Bela is expected to play the important role at national wine market so soon, ensuring quick and easy sales. So, gained contribution margins have to support the popularization of grape production and processing at the farm level, as this business solution (value added creation through wine production) will certainly improve competitiveness, while strengthen the sustainability of farms involved in viticulture, or even the sustainability of entire sector. Besides, paper has also certain scientific contribution, as at national or regional level there is no such a similar economic analysis.

Next research steps will lead to investment analysis (investment in vineyard planting, and grape and wine production), trying to discover which of observed varieties bring better economic results to farm, if it decides to enlarge current production capacities, or just to enter the sector of viticulture and winemaking for the first time. Potentially, further research steps could be also turned to decision making towards the choosing the most suitable variety for the Serbian growing circumstances, based on experts' opinion and further multi-criteria decision analysis.

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