ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 63, april-june 2017, № 2
P. 1-14

Jonel Subić[1]
Institute of Agricultural Economics, Belgrade

ORIGINAL SCIENTIFIC ARTICLE
DOI:10.5937/ekonomika1702001S
Received: May, 15, 2017
Accepted: Jun, 14, 2017

ASSESSMENT OF INVESTMENTS BY THE USE OF SOFTWARE APPLICATION FOR DEVELOPMENT OF THE BUSINESS PLAN IN AGRICULTURE[2]

Abstract

In order to meet the requirements of more and more finicky customers, both on the domestic and foreign markets, the strengthening of the domestic economy competitiveness, imposes, besides all, the need for programs that will improve agricultural and rural development. Accordingly, it was done the software application for development of business plan in any field of agricultural production and rural economy. In this research, focus was turned on the economic efficiency of investments made in crop production. Specifically, the effects of the investment in agricultural land and mechanization for crop production were assessed. It was done by static and dynamic methods, as well as methods for investments assessment under uncertainty. In all three cases, the assessment of the project effects (including or excluding the time factor) indicates the justified investments.

Key words: *economic effectiveness, investments, business plan, agriculture*

JEL classification: D13, G11

ОЦЕНА ИНВЕСТИЦИЈА ПРИМЕНОМ СОФТВЕРСКЕ АПЛИКАЦИЈЕ ЗА ИЗРАДУ БИЗНИС ПЛАНА У ПОЉОПРИВРЕДИ

Апстракт

Да би се испунили захтеви све више пробирљивих купаца, како на домаћем, тако и иностраном тржишту, јачање конкурентности домаће економије, намеће, поред осталог, потребу за програмима који ће унапредити пољопривредни и рурални развој. Сходно томе, израђена је софтверска апликација за израду бизнис плана у свакој области пољопривредне производње и руралне економије. У овом истраживању, акценат је стављен на економску ефективност инвестиција у области биљне производње. Конкретно, ефекти пројекта куповине пољопривредног земљишта и набавке механизације за ратарску производњу су оцењени помоћу статичких и

[1] jonel_s@iep.bg.ac.rs

[2] Paper is a part of research on the projects: III 46006 - Sustainable agriculture and rural development in function of the Republic of Serbia strategic goals achievement within the Danube region, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia, as well as Improvement of financial knowledge and recording on agricultural holdings, financed by the Ministry of Agriculture and Environmental protection of the Republic of Serbia.

динамичких метода, као и методе за оцену инвестиција у условима неизвесности. У сва три случаја, оцена ефеката пројекта (са или без употребе фактора време) указује на оправдано инвестиционо улагање.

Кључне речи: *економска ефективност, инвестиције, бизнис план, пољопривреда*

Introduction

In conditions imposed by the postulate of business oriented to market, investments should be realized in a form that will ensure the investment object's maximum effectiveness of exploitation, or the highest possible level of achieved effects per unit of invested financial assets.

Investment decisions in agricultural practice, regardless of the economic conditions, should be always based on rigorous quantitative and qualitative regulations, which will provide precise allocation of financial expenditures, or investing in the best (most effective) project variants (Rajnović, Subić, Zakić, 2016).

Observing the sector of agriculture, the entity that invests financial assets in order to obtain the necessary production resources which will be exploited during the longer period is called investor (entity could be a family agricultural holding, enterprise or entrepreneur).

In the interest of safety that financial assets are properly invested, so they will achieve the best possible results, both to direct investor and entire society, investor has to use appropriate methods, techniques and models for assessment of investments economic efficiency (Subić, Umihanić, Hamović, 2008).

Methods for assessment of investments are important not only at the farm level, but also in general assessment of sustainable development (social, economic and environmental) at the micro level.

Main goal of this research is to highlight the significance of the investment's economic efficiency for the sustainable development in the sector of agriculture, as well as the importance of the program for development of financial knowledge and recording at the agricultural holdings. Consequently, special attention is given to the software application for the assessment of a business plans at the agricultural holdings in the Republic of Serbia, which is based on the methods for assessing the economic efficiency of investments at the micro level (Cicea, Subić, Cvijanović, 2008), such are:

- static methods for assessment of investment projects;
- dynamic methods for assessment of investment projects;
- methods for assessment of investment projects under uncertainty.

Specifically, in this research was used an Excel software application for the business plan development in any sector of agricultural (crop and livestock) production.

Data sources and methodology

The main goal of investments at the agricultural holdings has to be much higher achieved effects per unit of invested financial assets.

The level of achieved effects depends on the quantity and quality of both, realized expenditures and gained incomes. The economic effectiveness of the investment could be calculated as the ratio of obtained effects and realized investment, or as a ratio of realized investment and obtained effects. Accordingly, for the calculation of the investment's economic efficiency it could be used the following formulas (Romanu, Vasilescu, 1993):

$$e = \frac{E}{\varepsilon} \rightarrow maximum \text{ or } e' = \frac{\varepsilon}{E} \rightarrow minimum$$

Where:

e and *e'* - economic effectiveness;

E - gained effects (achieved results);

ε - realized investments (spent resources).

In the first case, the mathematical formula indicates the economic effect that is achieved per unit of realized investment, which should be *maximized*.

In the second case, by the mathematical formula are shown the investments made per unit of measure of gained economic effects, which should be *minimal*.

Observing the sector of agriculture, *business plan* represents a detailed report (document) containing all elements of certain business idea that should be realized by certain agricultural holding (physical person or legal entity) and which enables to potential investors much faster consideration of presented idea and easier and more efficient decision-making about possible financing or participating in implementation of observed business idea (Ćejvanović et al., 2010).

Business idea, what should be achieved in a specific business and how will be provided required resources for the realization of previously set goals, agricultural holding (physical person or legal entity) is presenting by the business plan.

According to concept of sustainable development, business plan at agricultural holdings, besides basic data about investor, market aspects, description of investment idea, projections of incomes and expenditures, also is giving a feasibility of the business idea throughout the static, dynamic and assessment under uncertainty (Subić, 2010).

The business plan should also enable the agricultural holdings to predict their business operations in close future with the possibly lowest risk, as well as to mark their position within the economic environment in which their business activities are done (Kuzman, 2006).

In paper was done the assessment of investment made in purchase of agricultural land and mechanization required in crop production. By the use of Excel software application developed for the creation of business plans in any sector of agricultural production, author's intention was to consolidate methodologies used in developed European countries as to adjust them to domestic agricultural holdings (physical persons and legal entities).

Mentioned software application could significantly facilitate the activities in business planning, as in defining of strategic priorities and making investment decisions at agricultural holdings in the Republic of Serbia. By application launching it could be done detailed insight into the form and content of a business plan. After the opening of Project theme menu, by

the click on the box application for development of business plan in any sector of agricultural production main menu has to be selected and then in the menu for the selection of modules it should be started with data entering (Module 1. to Module 7.). Data importation is done in all fields marked in green, while in other fields previously imported values have converted automatically. After data importation, data could be recorded in the proper folder (Module 7.). Menu for module selection has following appearance:

Module 1.: General data
- Title of business plan
- Basic data about investor
- Basic data about investment
- Market aspects

Module 2.: Investing
- New fixed assets
- Total investment

Module 3.: Financing
- Source of financing
- Financial plan
- Credit calculator

Module 4.: Assessment of projects effects
- Assessment of projects effects
- Final remark

Module 5.: Summary of business plan
- Summary of business plan

Module 6.: Verification of business plan
- Verification of business plan

Module 7.: Data export
- Data recording

In paper were used the data collected on the family agricultural holding located at the territory of middle Danube region.

In order to improve production (plant and animal) on the family agricultural holding, as well as to better use the current capacities, holding plans to purchase agricultural land (6 ha) and adequate mechanization for crop production. On the mentioned area, which is the subject of purchase, will be produced corn (2 ha), wheat (2 ha) and sunflower (2 ha).

Planned investment would not lead to any negative impacts on the environment, while engaged labor (members of family agricultural holding, as well as external employees) will comply all safety rules.

Research results and discussion

Considering the research goal, the use of Excel software application for the development of business plan in any sector of agricultural production is primarily focused on the assessment of

investment's economic effectiveness. In the specific case, the assessment implies the investment in agricultural land and mechanization for crop production.

Module 4: Assessment of the project's effects

Cash flow

Projection of cash (financial) flow within the planned period implies summing of all values from pro forma invoice linked to the investment, as well as financing construction and income statement, excluding depreciation and interest of taken credit (Subić, 2016).

Table 1: Cash flow

/RSD/

No.	Element	Initial moment	Year				
			I	II	III	IV	V
I	**Total income (1+2+3)**	**6.798.439,11**	**1.745.000,00**	**1.745.000,00**	**1.745.000,00**	**1.745.000,00**	**3.235.392,91**
1.	Total revenues	0,00	1.745.000,00	1.745.000,00	1.745.000,00	1.745.000,00	1.745.000,00
2.	*Source of financing*	6.798.439,11					
	2.1. Own capital	2.362.745,91					
	2.2. External capital	4.435.693,20					
3.	*Remaining project value*	0,00	0,00	0,00	0,00	0,00	1.490.392,91
	3.1. Fixed assets	0,00					872.353,00
	3.2. PWC	0,00					618.039,92
II	**Total expenditures (4+5+6+7)**	**6.798.439,11**	**388.411,62**	**1.719.314,42**	**1.719.314,42**	**1.719.314,42**	**1.719.314,42**
4.	*Value of investment*	6.798.439,11					
	4.1. In fixed assets	6.180.399,19					
	4.2. In PWC	618.039,92					
5.	Costs without depreciation and interest	0,00	388.411,62	388.411,62	388.411,62	388.411,62	388.411,62
6.	Income tax	0,00	0,00	0,00	0,00	0,00	0,00
7.	Annuities	0,00	0,00	1.330.902,80	1.330.902,80	1.330.902,80	1.330.902,80
III	**Net income (I-II)**	**0,00**	**1.356.588,38**	**25.685,58**	**25.685,58**	**25.685,58**	**1.516.078,49**

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd

Economic flow

Unlike cash flow, in economic flow from income are excluded funding sources and remaining value of the project, as well as liabilities to sources of financing from expenditures (Subić, 2016).

Table 2: Economic flow

/RSD/

No.	Element	Initial moment	Year				
			I	II	III	IV	V
I	**Total income (1+2)**	**0,00**	**1.745.000,00**	**1.745.000,00**	**1.745.000,00**	**1.745.000,00**	**3.235.392,91**
1.	Total revenues	0,00	1.745.000,00	1.745.000,00	1.745.000,00	1.745.000,00	1.745.000,00
2.	*Remaining project value*	0,00	0,00	0,00	0,00	0,00	1.490.392,91
	2.1. Fixed assets	0,00					872.353,00
	2.2. PWC	0,00					618.039,92
II	**Total expenditures (3+4)**	**6.798.439,11**	**388.411,62**	**388.411,62**	**388.411,62**	**388.411,62**	**388.411,62**
3.	*Value of investment*	6.798.439,11					
	3.1. In fixed assets	6.180.399,19					
	3.2. In PWC	618.039,92					
4.	Costs without depreciation and interest	0,00	388.411,62	388.411,62	388.411,62	388.411,62	388.411,62
5.	Income tax	0,00	0,00	0,00	0,00	0,00	0,00
III	**Net income (I-II)**	**-6.798.439,11**	**1.356.588,38**	**1.356.588,38**	**1.356.588,38**	**1.356.588,38**	**2.846.981,29**

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

Static assessment of the project

In this case, the static assessment of the project relates to the calculation that for representative year uses fifth project year (i.e., the year of full capacity).

Efficiency of production

Production efficiency is usually presented by the coefficient of efficiency of production, which is calculated as the ratio between the overall revenue and overall costs (Subić, Kuzman, 2016).

Table 3: Coefficient of efficiency of production

/RSD/

Year of project	Total revenues – from sales	Total costs	Coefficient of efficiency of production
0	**1**	**2**	**3 = 1/2**
I	1.081.000,00	562.882,22	1,92
II	1.081.000,00	821.157,61	1,32
III	1.081.000,00	755.337,38	1,43
IV	1.081.000,00	685.478,19	1,58
V*	1.081.000,00	611.332,19	1,77

*Note: * Representative year (full capacity)*
Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

The investment is economical (i.e., investment is profitable) if the total income is higher than total costs, in other words if the coefficient is greater than one.

Accumulation (profitability) of production

Accumulation or profitability of production is usually presented by the rate of accumulation that could be calculated as the ratio between the profit (net effects) and total revenues (Subić, Kuzman, 2016).

Table 4: Rate of accumulation

/RSD/

Years of project	Profit	Total revenues – from sales	Rate of accumulation
0	**1**	**2**	**3 = (1/2)*100**
I	1.182.117,78	1.081.000,00	109,35
II	923.842,39	1.081.000,00	85,46
III	989.662,62	1.081.000,00	91,55
IV	1.059.521,81	1.081.000,00	98,01
V*	1.133.667,81	1.081.000,00	104,87

*Note: * Representative year (full capacity)*
Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd

The investment project is economically profitable (i.e. accumulative) if the rate of accumulation is higher than the supposed weighted cost of capital (i.e., interest rate). In other words, profitability of production is achieved if during the exploitation of the investment object price of financing sources could be covered and beyond that certain sum of "profit" could be achieved.

Rentability of investment (estimated value of investment)

Rentability of investment project is usually presented by the rate of rentability that could be calculated as the ratio of profit (net effects) and estimated value of investment (value given by the pro forma invoice). By calculation of rate of rentability is expressed the compounding of investment (Rajnović, Subić, Zakić, 2016).

Table 5: Rate of rentability

/RSD/

Years of project	Profit	Estimated value of investment	Rate of rentability
0	**1**	**2**	**3=(1/2)*100**
I	1.182.117,78	6.798.439,11	17,39
II	923.842,39	6.798.439,11	13,59
III	989.662,62	6.798.439,11	14,56
IV	1.059.521,81	6.798.439,11	15,58
V*	1.133.667,81	6.798.439,11	16,68

*Note: * Representative year (full capacity)*
Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

The investment project is profitable when its rate of rentability is higher than the assumed weighted cost of capital (i.e. interest rate).

Payback period of investment

Payback period of investment represents the difference between total value of investment and net incomes from the economic flow (the sum of the net incomes has to be higher than the overall value of investment, otherwise the investment will not be disbursed during the lifetime of project). The investment project is profitable if the payback period of investment is shorter than the period of loan repayment (Kuzman, 2006).

Table 6: Payback period of investment

/RSD/

Year of project	Net income from economic flow	Cumulative net incomes
0	-6.798.439,11	-6.798.439,11
I	1.356.588,38	-5.441.850,73
II	1.356.588,38	-4.085.262,35
III	1.356.588,38	-2.728.673,97
IV	1.356.588,38	-1.372.085,59
V	2.846.981,29	1.474.895,71

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

It's very important for investor that the period for which the net inflow (i.e. effect) created within the period of investment exploitation will repay the invested assets would be as short as possible (Subić, 2010).

Dynamic assessment of investment project

Considering the imperfections of static methods, currently throughout the world dynamic methods for assessment of the investment economic efficiency are mostly used (Vasiljević, 2006).

Some authors mark mentioned methods as discount methods or multi-period methods. Discount technique, which is the base of dynamic methods, is a method of bringing down of all incomes and expenditures, derived from investment and formed in different time periods, at their present value, or value of a certain common moment. Discount technique could be defined as a technique that brings down future income and cost flows to their present value (Gittinger, 1972).

The use of dynamic methods is based on the application of financial mathematics, which comes from the assumption that the incomes and expenditures, or net annual incomes (effects) generated in certain years (in different moments of investment establishment and exploitation) could be mutually compared and use for further calculations. Mentioned amounts should be previously made mutually comparable, i.e. bring them to the same accounting moment chosen for their comparison. This could be done by discounting of certain amounts of incomes and expenditures (or net annual incomes) by the use of complex compound interest calculation (Andrić, 1991).

The net present value and the internal rate of return

The method of net present value (capital value of investment) has the goal to show the justification of planned investment, or whether the investment object by itself is profitable or not. Net present value of investment presents the difference between the sum of the expected incomes realized by investment use and the sum of expenditures made for its implementation and use, brought down to the initial moment of investment exploitation (moment n = 0). In other words, the net present value could be considered as present value of the sum of the economic results achieved during the period of investment exploitation (Subić, 2016).

Table 7: The net present value and the internal rate of return

/RSD/

No	Element	Initial moment	Year of project					Initial moment
			I	II	III	IV	V	
0	1	2	3	4	5	6	7	8
1.	Net incomes from economic flow (3 to 7)	-6.798.439,11	1.356.588,38	1.356.588,38	1.356.588,38	1.356.588,38	2.846.981,29	***8.273.334,81***

2.	Discount rate (%)	4,26	4,26	4,26	4,26	4,26	4,26	
3.	Discount factor (1+i)-n or 1/(1+i)^n, where i = discount rate; n = year of project	1,0000	0,9591	0,9199	0,8823	0,8462	0,8116	
4.	Present value of net incomes (3 to 7)	-6.798.439,11	1.301.130,45	1.247.939,67	1.196.923,35	1.147.992,60	2.310.725,51	***7.204.711,59***
5.	Net present value of project (2 do 7)	**406.272,48**						
6.	Relative net present value of project [(2 do 7) /	2|] > i	**0,06**						
7.	Internal rate of return (IRR > i)	**6,14%**						

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

In order to consider planned investment profitable, the net present value of the project has to be positive, i.e. above the zero.

In some foreign literature sources, internal rate of return is often defined as "the average ability for profit making of invested capital over the period of investment project" (Gittinger, 1972).

In certain domestic literature sources, internal rate of return is usually defined as the "the level of effective compounding of invested financial assets", i.e. the level of investment profitability (Andrić, 1991).

The investment could be considered economically profitable if the internal rate of return is higher (or at least equal) than assumed calculative interest rate.

Payback period of investment

In practice, the method for determining the dynamic payback period of investment is used for risk assessment during the implementation of some investment project (usually as additional method for assessment of economic efficiency of investments (Subić, 2016).

Table 8: Payback period of investment

/RSD/

Year of project	Present value of net incomes	Cumulative net incomes
0	-6.798.439,11	-6.798.439,11
I	1.301.130,45	-5.497.308,66
II	1.247.939,67	-4.249.368,98
III	1.196.923,35	-3.052.445,63

IV	1.147.992,60	-1.904.453,03
V	2.310.725,51	406.272,48

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

Payback period of investment = overall investment - net incomes (where the sum of the net incomes from the economic flow has to be higher than overall investment, otherwise the investment would not be profitable over the period of its use). Therefore, it must be fulfilled the condition that the payback period is shorter than the period of credit repayment.

Project assessment under uncertainity

In conditions of uncertainty, assessment of project effects could be done by different methods and techniques. However, for the purpose of investment projects assessment at the level of family agricultural holdings, calculation of the break-even point could be considered sufficient.

Break-even point

Breakeven point additionally is also called as profitability threshold or critical point. Actually, this is a threshold or certain level of production and sales in which investment does not realized neither profit nor loss, or in which is still achieving a positive financial result (Subić, 2016).

Table 9: Break-even point

/RSD/

No	Element	Years of the project				
		I	II	III	IV	V
1	Income (I)	1.081.000,00	1.081.000,00	1.081.000,00	1.081.000,00	1.081.000,00
2	Variable costs (VC)	377.752,00	377.752,00	377.752,00	377.752,00	377.752,00
3	Fixed costs (FC)	10.659,62	10.659,62	10.659,62	10.659,62	10.659,62
4	Marginal result (MR=I-VC)	703.248,00	703.248,00	703.248,00	703.248,00	703.248,00
5	Break-even point (BEP = (FC/MR) x 100), (in %)	1,52	1,52	1,52	1,52	1,52
6	Break-even point by value (BEPv = (I x BEP) / 100)	16.385,47	16.385,47	16.385,47	16.385,47	16.385,47
7	Margin of safety (in %) (LS = ((1 - (BEPv / I)) x 100)	98,48	98,48	98,48	98,48	98,48

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

Variable and fixed costs

Table 10: Variable costs

/RSD/

No.	Element	Years of the project				
		I	II	III	IV	V
1.	Variable costs (VC = MC + L)	377.752,00	377.752,00	377.752,00	377.752,00	377.752,00
2.	Material costs (MC)	259.000,00	259.000,00	259.000,00	259.000,00	259.000,00
3.	Labour (L)	118.752,00	118.752,00	118.752,00	118.752,00	118.752,00

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd.

Table 11: Fixed costs

/RSD/

No.	Element	Years of the project				
		I	II	III	IV	V
1.	Fixed costs (FC= IMC - L)	10.659,62	10.659,62	10.659,62	10.659,62	10.659,62
2.	Immaterial costs (IMC), without depreciation and interest on credit	129.411,62	129.411,62	129.411,62	129.411,62	129.411,62
3.	Labour (L)	118.752,00	118.752,00	118.752,00	118.752,00	118.752,00

Source: Subić Jonel (2016). Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju. Studija slučaja. Institut za ekonomiku poljoprivrede, Beograd

According to methodology, it is necessary to calculate and analyze the critical and the minimal values of production volume and sales revenues below which investment is no longer profitable. Also, it should take all necessary measures that would prevent mentioned situation.

Conclusion

Summarizing the results obtained during the assessment of the investment project effects (project - "purchase of agricultural land and required mechanization for crop production") following conclusions could be drawn:

- *Coefficient of efficiency of production* is higher than one, what indicates that the total revenues surpass the total expenditures. Accordingly, it can be concluded that investment project is economical, or that investment is profitable.
- *The rate of accumulation* is higher than 4.26% (assumed weighted cost of capital). Accordingly, it can be concluded that the investment project is accumulative,

meaning that price of financing sources are covered, as well as additional profit is achieved during the project exploitation.

- In line with static calculation, the investment project will be repaid for 4.48 years. So, *payback period* is 4 years and 5.78 months (0.48 x 12 months).
- Five years of investment use (project lifetime) would enable to investor overall increase of profit for 406,272.48 RSD, calculating by discount rate (i = 4.26%) at the initial moment of exploitation (n = 0).
- Investment is profitable as the *internal rate of return* is higher than interest rate (6.14% > 6.00%), or discount rate (6.14% > 4.26%).
- According to dynamic assessment, investment project will be paid off for 4.82 years. So, payback period of investment is 4 years and 9.89 months (0.82 x 12 months).
- In all years of project period, production volume has not fallen below 1.52% (i.e. gained sales revenues have not been below 16,385.47 RSD).
- Also, in each year of project period it's allowed a decrease of production volume for 98.48%.

References

Andrić, J. (1991). *Troškovi i kalkulacije u poljoprivrednoj proizvodnji*. Poljoprivredni fakultet Beograd, Beograd-Zemun, Srbija.

Ćejvanović, F., Cvijanović, D., Grgić, Z., Hodžić, K., Subić, J. (2010). *Teorija troškova i kalkulacija u poljoprivredi - Dodatak - Katalog kalkulacija u poljoprivredi*. Institut za ekonomiku poljoprivrede - Beograd, Ekonomski fakultet - Univerzitet u Tuzli, Fakultet poslovne ekonomije - Univerzitet "APEIRON" u Travniku, Poljopivredno-prehrambeni fakultet - Univerzitet u Sarajevu.

Cicea, C., Subic, J., Cvijanovic, D. (2008). *Beyond Agriculture and Rural Development: Investments, Efficiency, Econometrics*. Institute of Agricultural Economics, Belgrade, Serbia.

Gittinger, P. J. (1972). *Economic Analysis of Agricultural Project*. The Johns Hopkins University Press, Baltimore and London, USA and UK, pp. 52-60.

Kuzman, B. (2006). *Metodologije za poslovno-strateško planiranje*. Opštinska uprava Beočin, Srpska knjiga, Ruma, Srbija.

Rajnović, Lj., Subić, J., Zakić, N. (2016). *Restrukturiranje privrednih društava u funkciji poboljšanja privrednog ambijenta u Republici Srbiji*. Institut za ekonomiku poljoprtivrede, Beograd, Srbija.

Romanu, I., Vasilescu, I. (1993). *Eficienţa economică a investiţiilor şi a capitalului fix*. Ed. Didactică şi Pedagogică, Bucureşti, Romania.

Subić, J., Umihanić, B., Hamović, V. (2008). *Sastavljanje investicione kalkulacije i njen značaj za izradu biznis plana na poljoprivrednim gazdinstvima*. Tematski zbornik. Univerzitet u Beogradu, Poljoprivredni fakultet, Institut za agroekonomiju, Beograd, Srbija, str. 287-294.

Subić J. (2010). *Specifičnosti procesa investiranja u poljoprivredi*. Institut za ekonomiku poljoprivrede, Beograd, Srbija.

Subić, J. (2016). *Softverska aplikacija za izradu biznis plana u svakoj oblasti poljoprivredne proizvodnje – kupovina poljoprivrednog zemljišta i nabavka mehanizacije za ratarsku proizvodnju*. Studija slučaja, Institut za ekonomiku poljoprivrede, Beograd, Srbija.

Subić, J., Kuzman, B. (2016). *Metodologija i uputstvo za izradu biznis plana na poljoprivrednim gazdinstvima*. Poglavlje V, u: Unapređenje finansijskih znanja i evidencije na poljoprivrednim gazdinstvima u Republici Srbiji, Institut za ekonomiku poljoprivrede, Beograd, Srbija.

Vasiljević, Z. (2006). *Upravljenje investicijama*. Skripta, Univerzitet Braća Karić, Fakultet za trgovinu i bankarstvo „Janićije i Danica Karić", Beograd, Srbija.