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# Financial Feasibility Analysis of Natura Rab Business: Case Study

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Additional information is available at the end of the chapter

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## Abstract

In 2015 Natura Rab decided to provide three very important investments that will greatly change and facilitate its future business activities, especially the first project. The first and largest financial investment is the construction of the new organic shop with products at the central farm called Natura Rab. The second investment project is the new 2500 m<sup>2</sup> olive plantation. The third investment in the analyzed family company is related to the beekeeping sector, and it involves several activities like buying new beekeeping equipment and new work vehicle. Before implementing the three investment projects, some financial parameters for the further assessment of investments were used, such as the net present value (NPV) and the internal rate of return (IRR). The investment value of the new shop is 38315.88 €, and the annual cash flow is 13,288 €. The net present value at the discount rate of 5.5% in the fourth year is 8260.55 €. The internal rate of return is 14.51%. The investment value for the second project, the new olive plantation, is 6620 €, and the annual cash flow is 2664.02 €. The net present value at the discount rate of 5.5% in the third year is 567.35 €. The internal rate of return is 10.04%. The investment value of the beekeeping sector for this year is 18428.50 €, and the annual cash flow is 41537.20 €. The net present value at the discount rate of 5.5% after the first year is 20943.25 €.

**Keywords:** Business project, Financial feasibility, Organic farming, Investments, CBA

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## 1. Introduction

The aim of a successful agriculture business in the twenty-first century is to achieve high profit in the shortest time possible, regardless of the type of agriculture production. This kind of

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business activity requires constant care and concentration but also the monitoring of competition. The success or failure of agricultural production is directly connected with the competence of a farmer, or, in other words, the one with a higher profit in agricultural production has managed to optimize investment costs in agricultural production [1].

In the field of agricultural economics, there are two main types of costs. The permanent (fixed) costs that are substantially independent of the production volume and variable costs that are significantly altered in changes in production output. It is the basic classification of costs. However, the dilemma lies in something else. Functionality of brought investment will be revealed with more precise data than just fixed and variable costs, which have direct or indirect impact on the investment [1]. So in financial analysis, there is a wide variety of different costs. In [2] author explains six most important management views in agricultural projects (cited in [3]):

- *Technical aspects* (analysis of the availability of production means, determining the quantity of inputs and associated production levels, identification of the existing relations between different business entities of agricultural production, etc.).
- *Institutional-organizational aspects* (the study of the institutional environment, within which the performance of a given investment project is predicted, especially in light of the evaluation of its organizational tidiness).
- *Commercial aspects* (dynamic evaluation of different production options while checking the abilities in marketing of agricultural products).
- *Financial aspects* (financial evaluation of the meaningfulness of investment in agriculture by identifying the resulting income or loss).
- *Economic aspects* (evaluation of the real contribution of specific agricultural project to positive growth of the entire economy).
- *Socio-social aspects* (specific socioeconomic analysis of the effects that can go in national economic system by individual investment project in agriculture).

The organic farm that was analyzed wanted to invest in three different projects in 2015 in order to improve sales and production conditions on the farm. All this progress goes for increasing productivity of the family company. Our own considerations and head calculations for projects were not enough and not correct. Economic parameters were used for the assessment of investments. A dynamic method of investment evaluation (CBA analysis) was applied to all three projects. The main goal was to develop a model for the assessment of the investment. It was examined by net present value (NPV) and internal rate of return (IRR). Planned annual cash flow and calculations for products were also developed with all additional costs in order to rate the investment more precisely, which gave us a realistic picture of the exact return of each investment. Economically efficient agricultural media system is the fundamental goal of the guidelines of every agricultural policy. Assessment of investment projects in agriculture is a multifaceted process [3]. The evaluation of specific agricultural projects is planned like evaluation of certain investments and has to be based on a variety of input costs and bring some types of benefits. In agricultural economics, in this case we are talking about the Cost-

benefit analysis (CBA). That is a comparative analysis of the total cost and total revenue of the agricultural project.

## 2. Materials and methods

On 4000 m<sup>2</sup> of land in the Barbat village at the south end of the island of Rab, a unique organic farm Natura Rab is developed. It is a family-run business comprising of both production and sale, growing typical medicinal and cultivated herbs, beekeeping, and sale of our own products right at our front door.

- In the research we will present three different projects we invested in this year. Project 1 is the new organic shop, project 2 is the new olive plantation, and project 3 is investment in beekeeping facilities. Further in text each project is presented separately, the reasons for their implementation are given as well as our ultimate goals. For each project identical tables in Microsoft Word and Microsoft Excel were made. All the necessary parameters are provided in order to have precise results and correct economic assessment of investment. Fixed and variable costs were separated in the CBA analysis. Costs of annual production of certain final products are also considered which serve as the production output. For each project there is a product table with explanations. It was necessary to be as realistic as possible to avoid imaginary situations, because then we lie to ourselves and the return of investment is not authentic. Technical specifications are made in detail especially in the first two projects that were technically demanding and the work dynamics was longer. Using the program developed in Microsoft Excel, it is easier to calculate the net present value and internal rate of return for each project using input data like amount of investment, annual cash flow, and discount rate with fixed value of 5.5% in all three projects.

## 3. Methodology of total cost calculation

### 3.1. Costs

Before we start describing complex economic parameters in this context, it is necessary to explain the theory of production costs. Costs are an integral part of each production process, and they appear as a result of different activities in the production chain [1]. We distinguish between fixed and variable costs, due to the fact that there are some costs that change during longer time period.

Fixed costs, which are independent of the production volume, reflect the use of fixed production assets. For example, fixed costs are land rent, interest related to the acquisition of agricultural land, various mortgage, and insurance premiums. However, various types of amortizations in agriculture production (buildings, machinery) are defined also like fixed costs which relate to noncash payments in agriculture [1].

Variable costs are dependent on the volume of production. This group of costs represents a wide range of various agricultural inputs and costs related to their use (pesticides, fertilizers, seeds, animal feed) [1].

The total cost of production as the sum of all production costs

$$TC = FC + VC \quad (1)$$

FC, fixed costs (€); VC, variable costs (€); and TC, total costs (€).

### 3.2. Investment costs

Investment costs are present in all three business projects. Consequently, they indicate the amount of each investment. In particular, they are separated in the first two projects, like investment construction costs and investment material costs.

### 3.3. CBA analysis in agricultural projects

The CBA analysis is the main methodological tool in the process of evaluation of specific agricultural projects or investments made in farming industry or some other agriculture types [3]. Comparative analysis of total revenues and total costs provides an answer to the question of selection of some investment projects in agriculture. All potential costs and revenues must be identified. As we look at all costs and revenues, we have to decide which investment projects will be selected and which will be denied [3]. The most important are the net present value (NPV) and the internal rate of return (IRR).

### 3.4. Annual cash flow (FR)

The annual cash flow is calculated as the difference between the total revenues and total costs:

$$FR = TR - TC \quad (2)$$

FR, annual cash flow (€); TR, total revenues (€); and TC, total costs (€).

### 3.5. Method of net present value (NPV)

In financial terms, the net present value (NPV) is defined as the sum of the present values (PVs) of incoming and outgoing cash flows over a period of time. Incoming and outgoing cash flows can also be described as benefit and cost cash flows, respectively [4]. It is a basic norm for financial decision-making. NPV encompasses the concept of the time value of money taking into account the present and future value of money such as in times of inflation [5]. Net present value (NPV) is determined by calculating the costs for each period of an investment, and after the cash flow is calculated, the present value (PV) of each period is achieved by discounting its future value at a periodic rate of return [6]. NPV is the sum of all the discounted future cash

flows. NPV is a useful tool to determine whether a project or investment will result in a net profit or a loss. A positive NPV results in profit, while a negative NPV results in loss (**Table 1**) [4]:

If...	It means...	Then...
NPV > 0	The investment would add value to the firm	The project may be accepted
NPV < 0	The investment would subtract value from the firm	The project may be rejected
NPV = 0	The investment would neither gain nor lose value for the firm	We are not sure whether to accept or reject the project. This project adds no monetary value. Decision should be based on other criteria, e.g., strategic positioning or other factors not explicitly included in the calculation

**Table 1.** NPV use in decision-making process.

$$NPV = -I + \sum_{i=1}^n \frac{TR - TC}{(1+r)^t} \quad (3)$$

NPV, net present value (€);  $I$ , amount of each agricultural investment (€); TR, total revenue (€); TC, total costs (€);  $r$ , average annual discount rate (%); and  $t$ , time period (number of years).

### 3.6. Method of internal rate of return (IRR)

Internal rate of return is the second important decision-making tool. Associated concept of net present value is internal rate of return, which is not served by a nominal value but the percent (interest) on the basis, and it still financially justifies the implementation of a certain investment in agriculture [3]. Simply put, the internal rate of return is a rate where NPV of the project is equal to zero that can be seen in the formula below:

$$IRR = -I + \sum_{i=1}^n \frac{TR - TC}{(1+r)^t} = 0 \quad (4)$$

IRR, internal rate of return (%);  $I$ , amount of each agricultural investment (€); TR, total revenue (€); TC, total costs (€);  $r$ , average annual discount rate (%); and  $t$ , time period (number of years).

## 4. Results and discussion

### 4.1. Project 1: investment in the new organic shop

In 2015, we decided to expand our existing organic shop. We want to have a unique space which is larger and more comfortable than the previous one, to obtain space for tasting and

sale of our organic products. The new organic shop becomes our only direct sales channel on the island, because we closed the second shop in the old town of Rab. Through the years we became a must-see station of our island of Rab. With good organization, development, and quality, we became a well-established company, and our old customers always keep coming back to buy and enjoy our products, and there always new ones as well. We create long-term relationships with customers based on high development of trust, as one of our main business goals.

In our new organic shop, we want to show all the riches of our hundred-year-old family tradition by representing old agricultural tools and beekeeping equipment of our ancestors; things that were hidden for years in cellars and were full of dust, just show them to people, and show how people used to live before. So it will be a diverse space with more facilities all our visitors can enjoy. The shop was finished in record time of just two months, including preliminary work in obtaining the necessary documentation to the last screw at the store. The shop is open all year, so we are always available to our customers.

The investment costs for the new organic shop are:

[T1] Investment construction costs for bio shop = 22,458 €

[T2] Costs of material during the construction of bio shop = 5544.88 €

[T3] Costs of interior design including installation = 10,313 €

starting from project documentation and geodetic study to the creation of all the necessary work finalization of the new shop.

Total investment costs (TIC)

$$\begin{aligned} \text{TIC} &= \text{T1} + \text{T2} + \text{T3} \\ \sum(\text{TIC}) &= 38315.88 \text{ €} \end{aligned} \quad (5)$$

#### 4.1.1. Production plan for sales in the new organic shop

Production plan is as realistic as possible with the planned annual quantities in order to treat them as further planned business activities and investment for our new shop, the place where we are going to sell our organic products. This kind of business philosophy is more known as direct sales. Our organic farm lives by a system of family-run business, and according to this statement, we have human and natural limits of the production on the island. Nature is generous but it has limitations. It is an unwritten rule that depending on how much we give the nature, this much she gives back to us. Organic production is divided into six groups: honey, immunity products, olive oil, natural cosmetics, noble drinks, and island delicacies. Our farm, with its space and technology, integrates the process of gathering, enriching, and packing honey and other agricultural produces. Our production standards are realized through the hazard analysis and critical control point (HACCP) program, and the production object is the export object of the final product in the European Union countries.



#### 4.1.2. Honey

Beekeeping in our farm is based on mobile ecological beekeeping on the south part of the island of Rab, the Barbat village and the Gorski kotar region. From the beginning of our activities, we have an average of one hundred beehives. As part of our business philosophy, we produce rare highly aromatic honeys that with their direct bactericidal and medicinal effect take up the lead position in everyday alimentation. After the bee pastures of sage (*Salvia officinalis* L.) and other medicinal honey plants on the island of Rab, we transport our bees (late June) into the mountains, in the region of Gorski kotar where we have bee pasture in mountain meadows and spruce and fir, the forest honey. Taking the two different locations of our apiaries into account, we estimated the production quantities in 2015 to be sold in our organic shop on the island of Rab. The plan for sage honey is 280 kg. The plan for multifloral honey "Bilje Kvarnera" is 480 kg. The plan for the forest honey "Šuma Kvarnera" is about 600 kg. The quantities will be divided and distributed in jars of various sizes, ranging from 212 to 580 ml. Production costs with quantities for honeys are:

Honey Salvia (150 g) = 666 €

Honey Salvia (260 g) = 576 €

Honey Bilje Kvarnera (400 g) = 2800 €

Honey Bilje Kvarnera (780 g) = 1300 €

Honey Šuma Kvarnera (400 g) = 2800 €

Honey Šuma Kvarnera (780 g) = 1300 €

Total costs ( $\Sigma$ ) = 9442 €

#### 4.1.3. Immune system products

This group represents four products. It is a synthesis of multiple products from the beehives. When they are blended together, they achieve much better effect on the human body. There is a strong emphasis on sage as a natural antiseptic as well as other products such as propolis, which has a great antibacterial effect. These are the planned production quantities for 2015 and sale through our organic shop: "Salvia Immunity" 260 g, 700 pieces; "Salvia Protect" 30 ml, 800 pieces; "Abies Immunity" 260 g, 400 pieces; and "Propolis" 30 ml, 200 pieces. Production costs with quantities for this group of products are:

Abies Immunity (260 g) = 2000 €

Salvia Immunity (260 g) = 4900 €

Salvia Protect (30 ml) = 800 €

Propolis (30 ml) = 800 €

Total costs ( $\Sigma$ ) = 8500 €



#### 4.1.4. Olive oil

Olive oil has always been known for its medicinal characteristics. Regular and long-term usage of olive oil in our diets reduces the risk of many diseases [7]. For better understanding, here is the classification with description of olive oil.

The top quality olive oil is labeled like extra-virgin comes from virgin oil production only. The spiciness and bitterness sometimes seem too aggressive, but it is only a proof that the oil is rich in all those ingredients that have a beneficial effect on health and which are a waste to lose through cooking or frying [8].

Virgin olive oil comes from virgin oil production only but is of slightly lower quality with free acidity of up to 1.5% and is judged to have a good taste but may include some sensory defects [9]. Olive pomace oil is refined pomace olive oil often blended with some virgin oil. It is fit for consumption, but may not be described simply as olive oil. It has a neutral flavor and also a high smoke point [9].

Natura Rab has only premium quality extra-virgin olive oil, usually with oleic acids below 0.5%. In our plantations you can find different olive varieties, like "Oblica," "Leccino," and "Pendolino." Olives are harvested on a daily basis by a handpicking system and immediately transported into the mill for processing into the finest olive oil. Almost all annual quantity of olive oil is sold through direct sale on our farm. In 2015, we plan to have 250 l of extra-virgin olive oil. This quantity we want to divide in 150 0.75 l bottles and 50 2 l bottles of. Production costs with quantities for olive oil are:

Olive oil (2 l) = 850 €

Olive oil (0.75 l) = 1400 €

Total costs ( $\Sigma$ ) = 2250 €

#### 4.1.5. Natural cosmetics

The richness of the Rab archipelago in over 800 herb species is a source of the island's aromatherapy. Some of them we use in production of our natural cosmetic line. We produce creams, oils, and soaps. The result of the continuous development in this sector is reflected by the entry in the register of the open cosmetic manufacturers. It is our duty but also a further confidence for end consumers of our products. For production, we use natural resources that grow on our organic farm, such as organic beeswax and extra-virgin olive oil. There are three main plants we use for the production of our cosmetic products. These are St. John's wort, immortelle, and lavender. These are the planned production quantities for 2015 for further sale in our organic shop: "St. John's wort" cream 50 ml, 300 pieces; "St. John's wort" oil 100 ml, 300 pieces; "Imortelle" cream 50 ml, 500 pieces; "Imortelle" oil 100 ml, 400 pieces; "Lavender" cream 50 ml, 200 pieces; and "Lavender" oil 100 ml, 200 pieces. In 2015, we produced 600 pieces of natural soaps, random kinds. Production costs with quantities for natural cosmetics are:

Imm. cream (50 ml) = 3000 €

St. John's wort cream (50 ml) = 1500 €

Lav. cream (50 ml) = 900 €

Imm. oil (100 ml) = 2200 €

St. John's wort oil (100 ml) = 1500 €

Lav. oil (100 ml) = 800 €

Gentle soaps (100 g) = 1200 €

Total costs ( $\Sigma$ ) = 11,100 €

#### 4.1.6. Brandies and liqueurs

According to the rich family tradition, we produce three types of our local brandies made with grape brandy as basis. The first one is the popular medica, homemade herb-flavored brandy. The second one is the fig liqueur, pure nature and phenomenal taste for someone who likes sweeter drinks. It is macerated organic dried fig in grape brandy. The third one, honestly, requires the least work in the production, but it does not mean that it is less valuable. It's called "Ruta" (*Ruta graveolens* L.); it got its name from the medicinal herb that is the main ingredient of this brandy. For all three brandies, we have one rule. It is a great experience to drink it out of a clay bicérin (small brandy glass) as an aperitif but also as a digestive. The special taste remains if it is drunk well chilled. These are the planned production quantities for 2015: "Travarica i eko med" 0.5 l, 400 pieces; "Smokovača" 0.5 l, 500 pieces; and "Ruta" 0.5 l, 250 pieces. Production costs with quantities are:

Medica (500 ml) = 2400 €

Smokovača (500 ml) = 3500 €

Ruta (500 ml) = 1000 €

Total costs ( $\Sigma$ ) = 6900 €

#### 4.1.7. Island delicacies

Island delicacies represent products like fig jam, lemon jam, organic honey vinegar, and organic olives in brine. These are the products that are created by a long-based family tradition of preparing natural food. Some of them are made only on demand (special orders or business gifts), while most of them are constantly available in our shop. These are the planned production quantities for 2015: organic honey vinegar 0.5 l, 400 pieces; olives 370 g, 200 pieces; fig jam 630 g, 300 pieces; lemon jam 630 g, 200 pieces; and honey biscuits 200 g, 300 pieces. Production costs with quantities are:

Honey vinegar (500 ml) = 1000 €

Olives in brine (380 g) = 500 €

Fig jam (630 g) = 900 €

Lemon jam (630 g) = 400 €

Honey biscuits (220 g) = 600 €

Total costs ( $\Sigma$ ) = 3400 €

#### 4.1.8. Variable costs and fixed costs on an annual basis in organic shop

Variable costs:

- Tasting the products on an annual basis = 800 €
- Cardboard packaging (bags and other supplies) = 1200 €
- Maintenance and cleaning = 500 €
- Energy (electricity, water) = 420 €

Total = 2720 €

Fixed costs:

- Promotional material = 300 €
- Costs of salesperson in the shop = 4500 €
- Insurance of shop (fire, earthquake, theft) = 100 €

Total = 4900€

#### 4.1.9. Planned income cash in the new organic shop on an annual basis

Total investment costs = 38315.88 €

Total production and sale costs = 49,212 €

TR = 62,500 €

FR = TR – TC

FR = 13,288 €

## 4.2. Project 2: investment in olive plantation

If we look from the perspective of agriculture on the Croatian islands, specifically on the island of Rab, there is a problem with the available land for cultivation. There are many reasons for that: smaller areas, difficult access to fields (sometimes just on foot), unsorted fields with undivided ownership, etc. In our case, it requires constant investments of new plantations with typical plants for our area. Maybe it is weird but it is certainly true; the ratio between islands and mainland is as follows: a thousand square meters land on the island is like one hectare of land on the mainland. Generally, the Mediterranean plant species such as olives, figs, lemons, and vine are grown. Agricultural land in which we would like to invest is located on the island a few kilometers away from our organic farm, and the sur-

face is 2500 m<sup>2</sup>. The land is a family legacy, and on it are already five adult olive trees. There is a place for more trees, and we decided to plant new 18 olive trees of our typical varieties. For better understanding, planting of olive trees is the easy part of the project. Before that, the land has to be prepared and protected against external factors, so we decided to make a 40-meter stone wall and 150-meter long fence. We also have to ensure an agricultural water connection for the irrigation system. Later, when the whole project is completed, crops should be maintained. According to our estimates, this location should give in their full fertility about 1200 kg of olives per year in ideal conditions. With the implementation of this project (calculated total costs of investment is 6620 €), we increase the annual production of olive oil, but also the work volume increases. Under “construction costs of the new plantation, surface 2500 m<sup>2</sup>,” the types of costs stated below have been taken into account:

- Excavation and cleaning channel
- Soil preparation and transport of biowaste
- Soil melioration with alignment of land
- Digging holes for seedlings with bagger 1 × 0.8 m
- Making of the main entrance gate
- Making of supporting stone wall
- Agricultural water connection
- Making of 150 m protective fence around the property (two persons)

The cost of the new investment plan we want to restore with picking up the new olives and transforming them into our product, the extra-virgin olive oil (production and total revenue based on 18 olive trees). From experience and knowledge in agriculture, in the first 4 years, we cannot count on the return of the investment because there is no cash flow from selling the products. Trees are too young, and the first crops will be available in the fifth year of growth.

Calculation scheme:

Total costs (variable + fixed costs) = 558 €

$N = 10$  years

$TC = 58.8$  €/year

$TC = 976.65 + 58.8$  €

$TC(y) = 1035.45$  €

$CP = \text{total costs/yield}$

$CP = 1035.45$  €/1260 kg

$CP = 0.82$  €/kg olives

100 kg olives = 16 l olive oil

$6.25\text{ kg} = 1\text{ l olive oil}$

$CP = 0.82\text{ €} \times 6.25\text{ kg}$

$CP = 5.14\text{ €/L}$

Price of 5.14 € is the breakeven for 1 l of olive oil based on the price of 0.82 €/1 kg olives. This input data is used in the next calculation for olive oil production (see **Table 2**).

Years	Yield (kg)	Olive oil production 6.25 kg/1 l	Cash flow through years €20/l
1–4	0	0	0
5	180	28.8	576
6	360	57.6	1152
7	720	115.2	2304
8th and further years (a 70-kg tree)	1260	20.6	4032

**Table 2.** Production and total revenue based on 18 olive trees (reproduction 16%).

In intensive plantations, the life of olive trees spans to about 50 years and can be divided into several periods. The nonproductive period is until the end of the fourth year. From sixth to seventh year is the period of initial cropping. From 8 to 30 years (the most important period) is a period of full fertility and economic standpoint. Variable costs for olive oil production from the eighth year onward including costs such as extra-virgin olive oil, chemical and sensory analysis, charge costs of oil bottle “Dorica” 750 ml, labels, PVC caps, plastic screw cap, and dispenser 31 × 24 mm is 1355.98 €.

Planned annual cash flow from sales of olive oil 0.75 l is calculated as:

$CP = TC/Y$

$CP = 1355.98\text{ €}/201.6\text{ l}$

$CP = 6.73\text{ €/L}$

$FR = TR - TC$

$FR = 4020\text{ €} - 1355.98\text{ €}$

$FR = 2664.02\text{ €}$

**4.3. Project 3: beekeeping investment**

In 2015 we decided to invest in the field of beekeeping. Optimization of transport resources is solved with purchase of a new work vehicle, which is also the largest investment this year in beekeeping (total investment costs = 18428.50 €). Of course, a multipurpose vehicle has more functions, so it will be used for other agricultural works as well. Also, we made a decision to

widen the existing apiary. Therefore, we bought new wooden beehives which will be applied when necessary. There is also other necessary professional equipment and tools which have to be changed, some of it at short-time intervals, some of them not so often. The maintenance in beekeeping has to be mentioned, because it represents a large item in annual costs, like the maintenance of trailer, truck, and others. It should be noted that beekeeping demands the greatest amount of work and time on our farm, and consequently, the whole family is involved in beekeeping activities. In recent years, we have invested significantly in the field of beekeeping, but nature is very unpredictable. It is normal to always hope for the best, but the human factor is not the most relevant here. So, we cannot be sure about the quantities of honey products on an annual basis. This year's investments are analyzed through the planned revenue from the sales of bee products through our three sales channel, such as export through distributors, Web shop, and fairs which presents total income cash = 66,124 €, considering all cost parameters (variable outdoor production costs = 8562 € and variable costs of indoor production and sale = 16024.80 €). Particularities of our micro-region are always represented through the sales of our organic products, and we always emphasize the relationship between possibilities and realities in nature.

Estimated annual cash flow through three sales channels is calculated as:

Total revenue = 66,124 €

Total costs = 24586.80 €

FR = TR – TC

FR = 66,124 € – 24586.80 €

FR = 41537.20 €

#### **4.4. Financial (CBA) analysis of individual investment projects**

##### *4.4.1. New organic shop*

- Investment value of the new organic shop is 38315.88 €.
- Total production and sale costs are 49,212 €.
- Planned annual base income cash in bio shop is 62,500 €.
- Financial result for this project is 13,288 €.
- Net present value is 8260.55 € at the discount rate of 5.5%.
- Repayment period of investment is in year 4, where Investment flow is 0.21€ (**Table 3**).

##### *4.4.2. New olive plantation*

- Investment value of new olive plantation is 6620 €.
- Total production costs are 1355.98 €.

- Annual income cash is 4020 €.
- Financial result for this project is 2664.02 €.
- Net present value is 567.35 € at the discount rate of 5.5%.
- Repayment period of investment is in year 3, where Investment flow is 0.36 € (**Table 4**).

Year	Discount rate 14.51%	NPV-investment flow
1	11604.23	-26711.65
2	10133.81	-16577.84
3	8849.72	-7728.13
4	7728.34	<b>0.21€</b>
5	6749.05	6749.26
6	5893.85	12643.11
7	5147.02	17790.13
8	4494.82	22284.95
9	3925.26	26210.21
10	3427.88	29638.09

**Table 3.** NPV assessment for project 1.

Year	Discount rate 10.04%	NPV-investment flow
1	2420.96	-4199.04
2	2200.07	-1998.97
3	1999.34	<b>0.36€</b>
4	1816.92	1817.28
5	1651.14	3468.42
6	1500.49	4968.91
7	1363.59	6332.50
8	1239.18	7571.68
9	1126.11	8697.79
10	1023.37	9721.16

**Table 4.** NPV assessment for project 2.

#### 4.4.3. Beekeeping investment

- Investment value for project 3 is 18428.50 €.
- Total production and sale costs through three channels are 24586.80 €.
- Planned annual base income cash for project 3 is 66,124 €.
- Financial result for project 3 is 41537.20 €.
- Net present value is 20943.25 € at the discount rate of 5.5%.
- Repayment period of investment is in year 1, where Investment flow is 0.53 € (**Table 5**).



Year	Discount rate 125.39%	NPV-investment flow
1	18429.03	0.53€
2	8176.51	8177.04
3	3627.72	11804.76
4	1609.53	13414.29
5	714.11	14128.40
6	316.83	14445.23
7	140.57	14585.80
8	62.37	14648.17
9	27.67	14675.84
10	12.28	14688.11

**Table 5.** NPV assessment for project 3.

## 5. Conclusion

The aim of this research was to study the economic validity of the three projects, considering economic parameters for the return of the investment (the net present value and the internal rate of return) and my input information. A model was developed in Microsoft Excel for the net present value assessment, which serves as a support for decision-making, should we go into the investment or not, or better said does the investment make sense, and when we expect the return in the terms of time.

Using the NPV and IRR methods showed, the return of the investment into new organic shop will be in 4 years. The return of the investment into new olive plantation will be in 3 years. The last investment into new beekeeping facilities will be by 5.5% discount rate in the first year (NPV = 20943.25 €).

With the implementation of these projects, we wanted to optimize our business resources, and in terms of productivity, we are much better than before. The projects have enabled easier performance in our obligations, but consequently, they increased the workload in both parts, first in the sales (project 1) and in terms of production (projects 2 and 3).

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## References

- [1] Turk, J. Agricultural economics: theory and application. Maribor: Faculty of Agriculture and Life Sciences; 1998. 176 p.
- [2] Gittinger, J.P. Economic analysis of Agricultural Projects [Internet]. 1985. Available from: [http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2000/04/19/000178830\\_98101903531847/Rendered/PDF/multi0page.pdf](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2000/04/19/000178830_98101903531847/Rendered/PDF/multi0page.pdf) [Accessed: 2015-09-28]
- [3] Turk, J. Theoretical and empirical analysis in agricultural economics. Maribor: Faculty of Agriculture and Life Sciences; 2001. 225 p.
- [4] Berk, J., De Marzo, P., Stangeland, D. Corporate Finance (3rd Canadian ed.). Toronto Pearson, Canada; 2015. 64 p.
- [5] Law, A.M. Using net present value as a decision-making tool. Air Medical Journal . 2004;23(6):28–33. DOI: 10.1016/j.amj.2004.08.025
- [6] Wikipedia. Net present value [Internet]. 2016. Available from: [https://en.wikipedia.org/wiki/Net\\_present\\_value](https://en.wikipedia.org/wiki/Net_present_value) [Accessed: 2016-07-26]
- [7] Covas, M. Olive oil and the cardiovascular system. Pharmacological Research. 2007;55:175–186. DOI: 10.1016/j.phrs.2007.01.010
- [8] Eko centar Natura Rab. Natura Rab [Internet]. 2016. Available from: <http://www.natura-rab.hr/en/products.html> [Accessed: 2016-07-28]
- [9] International Olive Council. Designations and definitions of olive oils [Internet]. 2015. Available from: <http://www.internationaloliveoil.org/estaticos/view/83-designations-and-definitions-of-olive-oils> [Accessed: 2015-09-10]

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