Business Review and Case Studies, Vol. 4 No. 3, December 2023
Permalink/DOI: http://dx.doi.org/10.17358/brcs.4.3.260
Available online at http://journal.ipb.ac.id/index.php/brcs
EISSN: 2721-6926

TECHNICAL AND FINANCIAL FEASIBILITY OF AROMATHERAPY PILLOW (TALOPHY) PRODUCTION: A SHEEP WOOL WASTE UTILIZATION VENTURE

Muhammad Surya Fadhlurrohman[*)1], Andriyono Kilat Adhi[*)], Nunung Kusnadi[*)]

[*)]Department of Agribusiness, Faculty of Economics and Management, IPB University
Jl. Kamper Wing 4 Level 5 Dramaga Campus, Bogor 16680, Indonesia

Article history:

Received
26 June 2023

Revised
28 August 2023

Accepted
7 November 2023

Available online
31 December 2023

Abstract: TALOPHY or aromatherapy pillow made from sheep's wool is an innovative product as a result of PKM 2020 activities. THALOPY is a new innovative product on the market, but the problem that occurs is the availability of raw sheep's wool which can only be obtained within a period of four months. Therefore, this study aims to analyze the technical and financial feasibility of the TALOPHY business plan. The methods used in this study are qualitative analysis on technical aspects and quantitative analysis on financial analysis. Technical aspects include business location, production scale, machine selection, production process, and the type of technology used. The financial aspect uses investment criteria including NPV, IRR, PP, and switching value analysis. The results of the study show the feasibility of the technical aspects, including the geographical location of the business, namely in Jatisari Village, Madiun Regency, East Java province; the availability of sheep wool is limited, namely only 800 kg every 4 months; the production scale is 200 pillows for one production (every 2 months); the production process of the TALOPHY business uses an intermittent or gradual method; the business layout facilitates production activities; and the technology is used as needed. Based on the results of the eligibility criteria, the TALOPHY business investment is not feasible to run. This is based on the NPV obtained for IDR 27,384,206, a net B/C of 1.3, an IRR of 4%, and a PP of 11 years and 8 months. The results of the switching value analysis show that the most sensitive factor or determinant of TALOPHY's business feasibility is a decrease in sales and a decrease in product prices, with a value of 1.63%.

Keywords: financial analysis, switching value analysis, technical analysis, sheep wool, insomnia

Abstrak: *TALOPHY atau bantal aromaterapi berbahan baku wol domba merupakan sebuah produk inovatif hasil kegiatan PKM 2020. THALOPY merupakan produk inovasi baru di pasaran, akan tetapi permasalahan yang terjadi yaitu ketersediaan bahan baku wol domba hanya dapat diperoleh dalam kurun waktu empat bulan sekali. Oleh karena itu penelitian ini bertujuan untuk menganalisis kelayakan teknis dan finansial dari rencana usaha TALOPHY. Metode pada penelitian ini menggunakan kualitatif pada analisis aspek teknis dan kuantitatif pada analisis finansial. Aspek teknis meliputi lokasi usaha, skala produksi, pemilihan mesin, proses produksi dan jenis teknologi yang digunakan. Aspek finansial menggunakan kriteria investasi meliputi NPV, IRR, PP dan analisis switching value. Hasil penelitian menunjukkan kelayakan dari aspek teknis meliputi letak geografis usaha yaitu di Desa Jatisari, Kabupaten Madiun, provinsi Jawa Timur, ketersediaan wol domba terbatas yaitu hanya 800 kg setiap 4 bulan sekali, skala produksi 200 bantal sekali produksi (2 bulan sekali), proses produksi usaha TALOPHY menggunakan cara teIDRutus-teIDRutus atau bertahap, layout usaha memudahkan kegiatan produksi, dan teknologi yang digunakan sesuai kebutuhan. Berdasarkan hasil kelayakan kriteria investasi usaha TALOPHY tidak layak untuk dijalankan. Hal ini berdasarkan pada NPV yang diperoleh sebesar Rp 27.384.206, Net B/C sebesar 1,3, IRR sebesar 4%, dan PP selama 11 tahun 8 bulan. Hasil analisis switching value menunjukkan bahwa faktor paling sensitif atau penentu kelayakan usaha TALOPHY adalah penurunan jumlah penjualan dan penurunan harga produk dengan nilai 1,63%.*

Kata kunci: *analisis finansial, analisis switching value, analisis teknis, wol domba, insomnia*

[1] Corresponding author:
Email: suryafd91@gmail.com

INTRODUCTION

Program Kreativitas Mahasiswa (PKM) is a national-level contest that is one form of implementation of the tridharma of higher education as an effort to grow, accommodate, and realize students' creative and innovative ideas (Belmawa, 2021).

Based on data from Kemendikbud (2020), In 2020 there was a total of 625.000 proposals were received and 101 higher education institutions in Indonesia followed this event. The number of participants that made it passed to the final stage or PIMNAS 33 with 625 proposals from 101 universities.

One of the Universities that attended the PKM 2020 is IPB University with 32 teams passing on to PIMNAS and with the best result getting third place. Out of the teams that passed on to PIMNAS, in the presentation category IPB has gained three gold medals, seven silver medals, and four bronze medals. One of the products of PKM IPB 2020 is a pillow made out of sheep wool with aromatherapy. This aromatherapy pillow during the PKM event is known as TALPOPHY, TALOPHY is an innovative product from one of the teams from PKM IPB 2020 known as team Talphy. In PKM IPB 2020, Trophy managed to claim second place in the presentation category.

TALOPHY is an innovative product that can help with insomnia. Insomnia isn't an illness, rather it is a disturbance that is frequently experienced by society (Nasution et al. 2022). If insomnia isn't taken care of then it may give rise to other illnesses like depression, fash, and heart diseases, it may also disrupt one's productivity (Ariantini and Hariyadi, 2012; Nurdin et al. 2018; Sharkey, 2019). The prevalence of insomnia sufferers in Indonesia reaches 10% of the total population or around 27 million people who suffer from insomnia (Tarlemba et al. 2018; BPS, 2020). It is estimated that 35–45% of insomnia sufferers are adults (Manggopa et al. 2019) and 12–39% are elderly (Hellstrom, 2013). Based on these problems, cases related to insomnia must be solved. This problem can be fixed with relaxation therapy and the use of aromatherapy, with an aromatherapy pillow as a sleeping aid (Ramadhan and Zettira, 2017). The creation of aromatherapy pillows can be one of the many solutions to help ease the insomnia problem.

The comfort of a pillow is directly caused by the material used to fill the pillow (Anggita and Astuti, 2018). An alternative material that can be used to fill a pillow is sheep wool because it is smooth and flexible. Not only that, sheep wool has many advantages, those advantages being thermoregulatory, hypoallergenic, antibacterial, anti-mite, and renewable and sustainable (Hermans et al. 2019). Choosing sheep wool is a good option for pillow filling. One of the reasons is that the sheep population reached 17 million in 2019 (Dirjen PKH, 2019), making the potential for sheep wool also quite large. However, the fact is that not all sheep are sheared and sheep wool waste is often found on sheep farms in the fattening sector. This affects the availability of sheep wool waste. Apart from that, sheep wool in Indonesia has not been utilized optimally and has only become livestock waste. This condition was exploited by the Talophy team to utilize sheep's wool in an innovative product, namely aromatherapy pillows filled with sheep's wool or TALOPHY, a product that has the benefit of helping overcome insomnia, improving sleep quality and alleviating stress.

TALOPHY as a result of the PKM event is more prominent in the innovative product design aspect of the event. A business plan has also been prepared but in the form of a simple business plan. The available business plan isn't perfect so it needs further study or further work put into it. Considering that TALOPHY is an innovative product that is not yet widely known in the world, it is necessary to study the feasibility of selling TALOPHY products.

TALOPHY's main raw material, sheep wool, is commonly found in sheep farms engaged in the fattening sector. Sheep that will enter the cage will be sheared. Shearing wool has good benefits for farmers and livestock themselves. According to Yamin et al. (2013) the benefits of shearing sheep wool are to increase comfort, help sheep release heat easily, improve ingestive behavior or increase appetite and improve the daily weight gain of sheep.

Fattening sector farms usually change livestock every 4 months. In conclusion, the availability of sheep's wool is only available once every 4 months. This results in the availability of sheep's wool cannot be available every day. So the production of TALOPHY requires proper planning to be carried out.

Rizano et al. (2022) in a study entitled business feasibility of increasing BSF fly production at PT Biomagg Indonesia explained that the company's collaboration with F&B companies to buy their waste as BSF fly production material was declared feasible and mutually beneficial to both companies. PT Biomagg Indonesia can also fulfill its organic waste needs and F&B companies also benefit from the sale of waste and can reduce their wasted waste.

The objectives of this study are (1) Analyzing the technical feasibility of TALOPHY production (2) Analyzing the feasibility of TALOPHY production investment based on financial aspects (3) Analyzing the amount of production and minimum income of TALOPHY business (4) Determining the most influential factors in TALOPHY business feasibility.

METHODS

This research was conducted in January-April 2021. The data used in this study are secondary data derived from the final report of the 2020 PKM-K of the Talophy team. In addition, secondary data obtained from relevant literature such as feasibility study books, journals and previous research results are used. The analysis used in this research consists of technical and financial aspects. Briefly explained as follows:

Technical Aspect Analysis

In the technical aspect, the things that need to be studied are related to business location, production scale, production process and technology use. This analysis is carried out qualitatively to explain the technical aspects of TALOPHY. Then it will be analyzed whether the technical aspects are feasible to produce TALOPHY.

Financial Aspect Analysis

In this study, the financial analysis consists of cash flow, profit/loss, BEP, investment criteria and switching value analysis. In the investment criteria used NPV, IRR, Net B/C, and PP analysis (Nurmalina et al. 2014). The following is the formula for calculating the investment criteria used:

Net Present Value (NPV)

The formula used to calculate NPV is as follows:

$$\text{NPV} = \sum_{t=1}^{n} \frac{\text{Bt} - \text{Ct}}{(1+\text{i})^{t}}$$

Description: Bt (Benefit in year t (rupiah)); Ct (cost in year t (rupiah)); i (discount rate (%)); t (year).

Feasibility criteria based on NPV are: NPV > 0, meaning the investment is profitable; PV < 0, meaning that the investment is detrimental and not feasible to spend; NPV = 0, meaning the investment is not profitable and not detrimental.

Internal Rate of Return (IRR)

IRR is obtained from the following formula:

$$\text{IRR} = \text{i}_1 + \frac{\text{NPV}_1}{(\text{NPV}_1 - \text{NPV}_2)} (\text{i}_2 - \text{i}_1)$$

Description: NPV1 (positive net present value (rupiah)); NPV2(negative net present value (rupiah)); i1 (discount rate produces positive NPV (%)); i2 (discount rate produces negative NPV (%)).

The IRR eligibility criteria are if IRR > DR then the investment is profitable and the business is feasible. If IRR < DR then the investment is detrimental and the business is not worth running.

Net Benefit Cost Ratio (Net B/C)

Net B/C can be calculated using the following formula:

$$\text{Net}\frac{\text{B}}{\text{C}} = \frac{\frac{\sum_{t=1}^{n} \text{B}_t - \text{C}_t}{(1+\text{i})^{t}}}{\frac{\sum_{t=1}^{n} \text{B}_t - \text{C}_t}{(1+\text{i})^{t}}} \quad \frac{[\text{B}_t - \text{C}_t] > 0}{[\text{B}_t - \text{C}_t] < 0}$$

Description: Bt (total revenue in year t); Ct (total cost in year t); i (applicable discount rate); t (year).

Investment criteria based on Net B/C are: Net B/C > 1, then NPV > 0, investment is profitable; Net B / C < 1, then NPV < 0, investment is detrimental; Net B/C = 1, then NPV = 0, investment is neither profitable nor detrimental.

Payback Period (PP)

It can be systematically formulated as follows:

$$PP=I/AB$$

Description: I (Cost of Investment); AB (Average annual cash flows).

Basic Assumptions

The business planning carried out is the establishment of a new business with a partnership system. TALOPHY's business partner is Jatisari Makmur sheep fattening farm. The production capacity of sheep at partners is 1,000 heads in 4 months. Sheep wool waste generated 800 kg of fresh wool in 4 months. TALOPHY production of 200 units every production period. The production period is once every 2 months. TALOPHY's business capital comes entirely from BNI KUR loans. Loan paid off within 5 years. The business capital borrowed from the bank is the total investment capital and working capital for 1 production period. The product produced is an aromatherapy pillow product (TALOPHY) with sheep wool as raw material. The selling price of TALOPHY products is IDR 200,000, which does not change during the life of the business. Pricing is based on competitor-based pricing and value-based pricing by taking the lowest average price of similar products (The price of similar products for aromatherapy pillows is IDR 200,000-300,000), but the price is more expensive than regular pillow products. Business life is determined based on economic life with reference to the largest asset, namely the business building with an asset life of 10 years. The interest rate (discount rate) used is the BNI bank KUR loan interest rate of 6% applicable in 2021. The prices of all equipment and costs used are the prices prevailing at the time of the research, namely February 2021. Calculation of depreciation using the straight-line method. The amount of tax used refers to Government Regulation of the Republic of Indonesia No. 23 of 2018 concerning income tax on income from businesses received or obtained by taxpayers who have a certain gross turnover (turnover), namely the tax imposed is 0.5%. In the switching value analysis, it is assumed that other components do not change (ceteris paribus).

This research is motivated by the limited availability of raw materials for making TALOPHY which is not available every day. Therefore, researchers are trying to analyze the technical aspects of the TALOPHY production business plan and whether it is feasible to run or not. In addition, the investment costs incurred in setting up a TALOPHY business are quite large. Researchers also tried to analyze the feasibility of the financial aspects of the TALOPHY business. Furthermore, after knowing the feasibility of the financial aspects of the TALOPHY business, researchers conducted a switching value analysis. This analysis is useful to find out what factors are most influential in the feasibility of the TALOPHY business and to measure how much the maximum change in these factors is.

RESULTS

Product Overview

TALOPHY is a health pillow made with 100% sheep wool filling that has been processed and added aromatherapy inside. Two kilograms of fresh sheep's wool are required to make one TALOPHY pillow. The sheep's wool is then processed and one kilogram of processed sheep's wool is obtained. TALOPHY weighs one kilogram with the inner pillowcase fabric using flannel fabric and the outer pillowcase using cotton fabric. TALOPHY has three variations of product colors, namely green, blue and gray. The aromatherapy used is lavender aromatherapy which has a relaxing effect and can help overcome insomnia (Salsabilla, 2020). The TALOPHY shape design has a different and unique shape when compared to pillows in general. The TALOPHY pillow shape is based on research by Liu et al. (2011) which states that this pillow shape is the most comfortable pillow shape when used for sleeping. The detailed raw materials required to make one TALOPHY product can be seen in Table 1.

Technical Aspect

The technical aspects studied include business location, production scale, machine selection, production process and the type of technology used whether it is appropriate. The TALOPHY business is planned to be established in Jatisari Village, Geger District, Madiun Regency, East Java Province by renting a building in the village. The selection of this location is based on

proximity to the required raw material, namely sheep wool. Because in this village several sheep farmers can be used as suppliers. The farm used as a partner by the TALOPHY business is the Jatisari Makmur farm with a capacity of more than 1,000 heads. Each sheep can produce 0.8 kg of wool per year (Umizakiah et al. 2014), so the farm can produce 800 kg of wool every 4 months. In detail, the production of wool waste in a year that can be produced by partners can be seen in Table 2.

TALOPHY's production scale is based on the availability of raw materials from business partners and estimated product demand. Sheep breeder partners as providers of waste raw materials can provide 2.400 kg of fresh wool in a year. Therefore, 1,200 TALOPHY products are produced in a year. Meanwhile, based on the Neilpatel website (2020), the search for similar products, namely down pillows, reaches 9,900 pieces every month. Because TALOPHY is a new product, it is assumed that TALOPHY can enter around 1%, namely 100 pieces per month In detail, the amount of TALOPHY production in a year can be seen in Table 3.

The TALOPHY production process is carried out in stages, because TALOPHY is not a product that must run out every day and the availability of raw materials is not always there every day. In the TALOPHY business, production activities are carried out once every 2 months and production activities are carried out for 3 weeks. The production process carried out by the TALOPHY business is as follows: raw material preparation, raw material processing (wool processing and aromatherapy, as well as making pillowcases), pillow combining and product packaging. In detail, the timeline of TALOPHY's business activities in one production period can be seen in Table 4.

The TALOPHY business has a business life of 10 years based on economic life. The construction of TALOPHY's production facilities and infrastructure such as buildings, sewing machines and other equipment takes four months. The preparation for this production will be completed in the fourth month. Therefore, TALOPHY production will start in the fifth month. In the first year, TALOPHY will receive revenue in the fifth to twelfth month. Then, in the following years, the production amount is assumed to be constant and accumulated from months one to twelve each year. The detailed production plan of TALOPHY can be seen in Table 5.

Table 1. Raw materials for making one unit of TALOPHY

Raw Materials	Quantity	Units
Wool Waste	2	kg
Cotton Fabric	1.5	m^2
Flannel Fabric	1.5	m^2
Detergent	10	g
Yarn	10	m
Hot glue filling	¼	lem
Hardbox	1	pcs
Label	1	pcs
Aromatherapy Wax	3	g
Tea paper	1	pcs
Plastic clips	1	pcs
Leaflet	1	pcs
Selsun Shampoo	10	g

Table 2. Availability of wool waste in a year

Period	Quantity	Units
1	800	Kg
2	800	Kg
3	800	Kg
Total	2,400	kg

Table 3. TALOPHY production quantity in a year

Period	Quantity	Units
1	200	pcs
2	200	pcs
3	200	pcs
4	200	pcs
5	200	pcs
6	200	pcs
Total	1,200	pcs

Table 4. TALOPHY production activity timeline plan per period

Activities	Month 1				Month 2			
	1	2	3	4	1	2	3	4
Raw material preparation								
Raw material processing								
Pillow combining								
Product packaging								
Promotion								
Sales								
Evaluation								

The labor required in the TALOPHY business consists of direct labor and indirect labor. Indirect labor is needed in marketing activities with a total of 2 people and is paid based on the minimum wage. Direct labor is needed in TALOPHY production activities with a total of 6 people and is paid based on daily wages. The detailed division of direct labor tasks can be seen in Table 6.

The selection of technology in the production of TALOPHY is based on the production scale plan and the ability of the workforce to operate it. In addition, the selection of technology is also based on the availability of technology suppliers and the capacity of appropriate technology. The technologies used in the TALOPHY business are sewing machines, digital scales, vacuum equipment, sealer, laptop and so on. In detail, the facilities and infrastructure needed by the TALOPHY business can be seen in the needs of investment goods in Table 7. Based on the results of the analysis of the technical aspects of the TALOPHY business according to the needs and can facilitate the TALOPHY production process, the production of TALOPHY is possible.

Table 5. TALOPHY production plan

Years	Price / pcs (IDR)	Quantity / years (unit)
1	200,000	800
2	200,000	1200
3	200,000	1200
4	200,000	1200
5	200,000	1200
6	200,000	1200
7	200,000	1200
8	200,000	1200
9	200,000	1200
10	200,000	1200

Table 6. Division of labor duties for TALOPHY production

Activities	Quantity (people)	Quantity (hours)	Quantity (day)	Working people's day
Processing wool and aromath-erapy	2	6	5	8.6
Making pillowcases	2	6	9	15.4
Pillow bundling and packaging	2	6	4	6.9
Total			18	30.9

Table 7. Investment goods needs of TALOPHY business

Investment	Quantity	Units
Building	96	m^2
Land	144	m^2
Electricity installation	1	pcs
Water pump	1	pcs
Work desk	3	pcs
Office chair	3	pcs
Guest table and chair	1	package
Plastic chair	4	pcs
Sewing table	2	pcs
Sewing machine	2	pcs
Bucket	4	pcs
Filter	2	pcs

Investment	Quantity	Units
Scissors	4	pcs
Cutter	6	pcs
Tarpaulin	2	pcs
Measurers	4	pcs
Glue gun	2	package
Sealer	1	pcs
Printer	1	pcs
Laptop	2	pcs
Digital scales	1	pcs
Vacuum	1	pcs
Fabric cutter	1	pcs

Finansial Aspect - Cash flow

This analysis will explain how revenue, how much investment and operational costs through revenue flow and expenditure flow TALOPHY business.

Inflow

Inflow is the cash inflow that comes from the income of the business being run. In the TALOPHY business, revenue is obtained from two components, namely the sale of TALOPHY pillow products and the salvage value of the business which is calculated at the end of the business life.

Revenue is obtained from the sale of TALOPHY pillow products obtained from multiplying the total production of TALOPHY pillows and the selling price of TALOPHY pillow products for each production period, then converted in one year. TALOPHY produces 1,200 pieces per year at a price of IDR 200,000 per piece, so the total revenue for a year is IDR 240,000,000. In detail, the total sales value of the TALOPHY business can be seen in Table 8.

Table 8. Total sales value of TALOPHY business

Product	Years (IDR)	
	1	2-10
TALOPHY's pillow	160,000,000	240,000,000
Total	160,000,000	240,000,000

Residual value is an additional input of revenue or benefits for a business. Residual value is obtained from the value of investment goods that have not been used up during the life of the business. In the TALOPHY business, the residual value is obtained from the value of investment goods that have not been used up until 10 years of business life and is an addition to the revenue added to the flow of business revenue. The total residual value of Talophy's business is IDR 543,333.

Finansial Aspect - Outflow

Outflow are cash flows that reduce cash, as a result of costs incurred to run the business at the beginning of the year and during the business. The sources of TALOPHY's business expenses consist of investment and reinvestment costs, operating expenses, and income tax.

Investment costs are costs that are usually incurred at the beginning of a business and at a certain time to obtain benefits in the following years. In the TALOPHY business, investment costs incurred are used to purchase land, build buildings, and purchase TALOPHY production equipment. The total investment cost of the TALOPHY business is IDR 269,260,000. Investment costs are not only incurred at the beginning of the year of business establishment, but can also be incurred in several years of business. Investment costs whose economic life is less than the life of the business will be reinvested. The total cost of reinvestment incurred is IDR 35,490,000. Reinvestment needs to be done because of the depreciation costs on the investment component. Depreciation costs reduce the economic life of investment components. The total depreciation cost of TALOPHY investment items is IDR 25,860,889.

Operating costs are all costs incurred to produce products, including production, maintenance and other costs. Operating costs consist of two costs, namely: variable costs and fixed costs. Variable costs are costs that are influenced by the amount of product production produced. TALOPHY's variable costs are used to purchase raw materials for the production of TALOPHY, namely sheep wool, fabric, aromatherapy, packaging, production TK and other components. The total variable costs incurred for a year of TALOPHY production amounted to IDR 133,419,000.

Fixed costs are costs whose amount is not affected by the amount of product production produced. The TALOPHY business has four fixed costs, namely internet costs, marketing labor, promotion and transportation. The detailed amount of TALOPHY's fixed costs can be seen in Table 9.

TALOPHY's business income tax is based on the government regulation of the Republic of Indonesia Number 23 of 2018 concerning income tax on income from businesses received or earned. Taxes received by businesses that have income below 4,8 billion are subject to a tax rate of 0.5% annually. Payment of the tax rate is made annually with the amount depending on the business income. The amount of tax paid by the TALOPHY business in the first year is IDR 800,000 with a turnover of IDR 160,000,000. Based on the second to tenth year, the TALOPHY business gets a turnover of IDR 240,000,000, so the amount of tax value that must be paid is IDR 1,200,000 each year.

Profit/Loss

Profit and loss projections are carried out to determine future business development by looking at the net profit received each year. The company's profit and loss consists of several components, namely business revenue, variable costs, fixed costs, and depreciation costs, as well as tax costs. Based on the profit/loss analysis that has been carried out, it can be seen that the net profit earned by the TALOPHY business in the first to fifth years is negative. Then, the net profit in the sixth to tenth years was IDR 16,580,111.

Break Even Point (BEP)

BEP is a break-even point where total revenue is equal to total costs incurred. The results of the BEP analysis obtained at the TALOPHY business are BEP units of 709 units and BEP rupiah of IDR 141,728,825. These results indicate that for the TALOPHY business to run, the minimum product produced is 709 units or an income of IDR 141,728,825. TALOPHY business in a year can produce as many as 1,200 pillows and get a gross income of 240,000,000. So that the TALOPHY business is feasible and possible to run.

Investment Feasibility Criteria

The analysis of TALOPHY business investment feasibility criteria uses four measuring instruments, namely NPV (Net Present Value), IRR (Internal Rate of Return), Net B/C (Net Benefit-Cost Ratio), and PP (Payback Period). The value of the TALOPHY business investment feasibility criteria can be seen in Table 10.

Based on the results of the feasibility analysis of the TALOPHY business investment criteria at a DR level of 3.25%, it shows that the investment is not feasible. Because the business profits obtained are very low when compared to similar businesses and the payback period obtained exceeds the life of the business. An example of a similar business is research conducted by Jumaita (2017) on the Maha Karya furniture industry development business in Kampar Kiri District, Kampar Regency. The business requires an investment of IDR 66,100,000 and with a business life of 5 years, the business is able to generate an NPV of IDR 339,847,120 and a Net B/C value of 1.15.

Switching Value Analysis

Switching value analysis is a tool to measure the maximum change in inflow and outflow components in a business that can still be tolerated by the business, so that the business remains viable. The switching value analysis was conducted on the TALOPHY business based on four main things, namely the revenue of the TALOPHY business only comes from the sale of TALOPHY pillow products, the selling price of TALOPHY products, the limited availability of sheep wool raw materials that affect the amount of production and fluctuations in the price of TALOPHY production components. Based on Table 11 of the switching value analysis, it is found that the determining factor of TALOPHY's business feasibility is a decrease in sales and a decrease in product prices with a value of 1.6%. The small change value indicates that the business is very sensitive to changes in the number of sales and product prices.

Table 9. Total fixed costs of TALOPHY business

Fixed Cost	Price / units (IDR)	Total Price / years (IDR)
Internet	150,000	1,800,000
Marketing labor	3,920,000	47,040,000
Transpor-tation	315,000	1,890,000
Promotion	2,000,000	12,0000,000
Office Stationery	35,000	210,000
Total		62,940,000

Table 10. Results of investment feasibility criteria TALOPHY

Criteria	Indica-tors	Value	Result
NPV	≥ IDR 0	IDR 27,384,206	feasible
IRR	≥ 3.25 %	4%	feasible
Net B/C	≥ 1	1.3	feasible
PP	≤ 10	11years 8 month	Not feasible

Table 11. Results of TALOPHY business switching value analysis

Changes	Change Limit
Decrease in product sales	1.63 %
Decrease in product selling price	1.63 %
Decrease in wool waste availability	3.31 %
Increase in variable costs	3.19 %

Managerial Implications

The results of research related to the tennis aspect of the TALOPHY business are feasible and can be run. Based on the financial aspect, the TALOPHY business is not feasible. So the TALOPHY team should not realize the business. However, if they want to continue running the business, the TALOPHY team needs to evaluate and re-plan the costs that will be incurred. Expenditure changes that can be made are investment costs related to buildings that are better done with building leases. Other changes that can be made are changes in selling prices by determining specific sales targets, so that prices can be adjusted and higher prices. The TALOPHY team must add raw material supply partners and maintain sales stability and product prices. This is because these are the factors that most affect the feasibility of TALOPHY's business.

CONCLUSIONS AND RECOMMENDATIONS

Conclucions

At the level of raw material availability that can only produce 200 units, the TALOPHY business based on the technical aspect analysis is feasible and TALOPHY is possible to produce. The results of the financial analysis with business conditions that can only produce 200 units, a business life of 10 years and at a discount rate of 6%, the TALOPHY business is not feasible to run. This is because the results of the investment analysis show that investment is better spent on running other businesses than the TALOPHY business. The results of the BEP analysis found that for the TALOPHY business to continue running, the business must at least produce 709 units of TALOPHY or get a minimum income of IDR 141,728,825. The results of the switching value analysis found that the factors that have the most influence on the feasibility of the TALOPHY business are sales factors and the price of TALOPHY products.

Recommendations

For the TALOPHY business to be feasible, the business must increase revenue or reduce expenses. The most likely alternative is to increase revenue through an increase in the selling price of TALOPHY products. Because the price of TALOPHY products applied is still at the lowest average of competing products, it is still possible to increase the price. Another alternative is to reduce expenses by using rental buildings as production premises. The result is that the investment cost of buying buildings and land can be eliminated. TALOPHY should add more sheep wool supply partners to maintain and increase the availability of raw materials. Currently, there is only one partner and if the partner cannot fulfill the wool needs, the production at TALOPHY business will be disrupted. When the TALOPHY business is running, the business must be able to maintain the stability of product sales and prices. Because this factor is the most influential factor affecting the feasibility of the TALOPHY business.

REFERENCES

Anggita D, Astuti DA. 2018. Tinjauan material dan bentuk ragam jenis produk bantal leher di Jabodetabek. *NARADA* 5(3): 383-399.

Ariantini F, Hariyadi S. 2012. Gangguan insomnia pada mahasiswa yang menyusun skripsi (studi kasus pada mahasiswa jurusan psikologi universitas Negeri Semarang). *INTUISI* 4(3):1-5. https://doi.org/10.15294/intuisi.v4i3.13341

[Belmawa] Direktorat Pembelajaran dan Kemahasiswaan. 2021. *Buku Pedoman 1 Program Kreativitas Mahasiswa.* Jakarta: Kementerian Pendidikan dan Kebudayaan.

[BPS] Badan Pusat Statistik. 2020. *Hasil Sensus Penduduk Tahun 2020.* Jakarta Pusat: Badan Pusat Statistik.

[Dirjen PKH] Direktorat Jenderal Peternakan dan Kesehatan Hewan. 2019. *Statistik Peternakan dan Kesehatan Hewan: Dirjen PKH Kementan.* Jakarta: Direktorat Jenderal Peternakan dan Kesehatan Hewan

Hermans R, Cremers NAJ, Leeming JP, Werf ET. 2019. Sweet relief: determining the antimicrobial activity of medical grade honey against vaginal isolates of candida albicans. *Journal of Fungi* 5(3):85-93. https://doi.org/10.3390/jof5030085

Hellstrom A. 2013. Insomnia symtoms in elderly persons [disertasi]. Sweden: Lund University Faculty of Medicine.

Jumaita. 2017. Analisis kelayakan pengembangan industri mebel maha karya di Kecamatan Kampar Kiri Kabupaten Kampar. *Jurnal online mahasiswa Fakultas Ekonomi* 4(1):714-727

[Kemendikbud] Kementerian Pendidikan dan Kebudayaan. 2020. Press Release Pekan Ilmiah Mahasiswa Nasional (PIMNAS) 33 Tahun

2020. https://pusatprestasinasional.kemdikbud.go.id/2020/11/30/press-release-pekan-ilmiah-mahasiswa-nasional-pimnas-33-tahun-2020/ [2021 Mar 28].

Liu SF, Lee YL, Liang JC. 2011. Shape design of an optimal comfortable pillow based on the analytic hierarchy process method. *Journal of Chiropractic Medicine* 10:229–239. https://doi.org/10.1016/j.jcm.2011.04.002

Manggopa R, Kundre R, Katuuk M. 2019. Aktivitas fisik dengan kejadian insomnia pada atlet gym. *E-journal Keperawatan* 7(2):1–6. https://doi.org/10.35790/jkp.v7i2.24471

Nasution MA, Mardhiati R, Hamal DK. 2022. Faktor-faktor yang berhubungan dengan gejala insomnia pada siswa menengah atas. *Buletin Kesehatan* 6(2):173-186.https://doi.org/10.36971/keperawatan.v6i2.124

Neilpatel. 2020. Keyword Overview: Bantal Bulu Angsa. https://www.neilpatel.com/ubersuggest/ [2020 Sep 20].

Nurdin MA, Arsin AA, Thaha RM. 2018. Kualitas hidup penderita insomnia pada mahasiswa. *Media Kesehatan Masyarakat Indonesia (MKMI)* 14(1):128–138. https://doi.org/10.30597/mkmi.v14i1.3464

Nurmalina R, Sarianti T, Karyadi A. 2014. *Studi Kelayakan Bisnis Edisi ke-3*. Kurniawan MC, editor. Bogor: IPB Pr.

Pratiwi LD, Noorsyoda RMA, Hapsari KL, Prambudi SB, Fadhlurrohman MS. 2020. *Laporan Akhir PKM-K TALOPHY*. Bogor: Institut Pertanian Bogor.

Ramadhan MR, Zettira OZ. 2017. Aromaterapi bunga lavender (Lavandula angustifolia) dalam menurunkan risiko insomnia. *Majority* 6(2):60–63.

Rizano DTD, Rifin A, Suprehatin. 2022. Kelayakan bisnis peningkatan produksi lalat black soldier fly pada PT Biomagg Indonesia. *Jurnal Aplikasi Manajemen dan Bisnis* 8(1):293-301. http://dx.doi.org/10.17358/jabm.8.1.293.

Salsabilla AR. 2020. Aromaterapi lavender sebagai penirin tingkat kecemasan persalinan. *Jurnal Ilmiah Kesehatan Sandi Husada* 10(2):761-766. https://doi.org/10.35816/jiskh.v12i2.407

Sharkey L. 2019. The Link Between Insomnia and Cardiovascular Disease. https://www.medicalnewstoday.com/articles/327026. [021 Feb 05].

Tarlemba F, Asrifuddin A, Langi FLFG. 2018. Hubungan tingkat stress dan kecanduan smartphone dengan gangguan kualitas tidur pada remaja di SMA Negeri 9 Binsus Manado. *Jurnal KESMAS* 7(5):1-9. https://doi.org/10.35790/jkp.v7i1.22895

Umizakiah K, Yamin M, Soenarno MS. 2014. Karakteristik fisik wol domba batur dan domba garut. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan* 2(1):243–250.

Yamin M, Rahayu S, Ma'ani A. 2013. Kesejahteraan domba akibat pencukuran: tingkah laku domba sebelum, saat, dan setelah pencukuran bulu. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan* 1(1):15–18.