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Feasibility Analysis Assistance for Oyster Mushroom Cultivation as a Sustainable Entrepreneurial Solution

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ABSTRACT

Oyster mushrooms are widely consumed as part of daily food, similar to green vegetables. They contain beta-glucan fiber, antioxidants, and nutrients that support heart health, immunity, cognitive function, blood sugar control, and reduced cancer risk. These benefits encouraged Mr. Asmari to develop an oyster mushroom processing business. This community service activity evaluates the feasibility of the business based on four main aspects. From the engineering and production aspect, the business location is accessible, and electricity and water are adequate. The mushroom house is suitable, with proper shelves, ventilation, wide access doors, and sufficient lighting. However, production capacity has dropped significantly from about 1 kg to around 100 grams per baglog, indicating reduced productivity. In the aspect of organizational management and human resources, the number of workers is limited, and all production stages depend on minimal labor, so this aspect is considered not feasible. From the market and marketing aspect, products reach several schools and traditional markets, and product innovations match consumer preferences, although the market area remains small. Financial analysis also shows infeasibility, indicated by a payback period of more than five years, negative NPV, an IRR below the 30 percent standard, and a profitability index under 1.

Keywords: Business Feasibility, Engineering and Production, Finance, Market and Marketing, Organizational and Human Resource Management.

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INTRODUCTION

The Indonesian economy is largely driven by increased household consumption, and one of the fastest-growing industries is the food and beverage industry. The food and beverage industry is a popular business sector, attracting a large number of enthusiasts. Young people, housewives, and other groups are flocking to this industry. The oyster mushroom industry is currently a promising prospect in Indonesia. This is because oyster mushrooms have recently become a widely traded

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commodity. In fact, they have become part of people's daily diets, alongside green vegetables. Oyster mushrooms are a type of mushroom that can be consumed and offer numerous benefits for the body. They are rich in fiber, vitamins, minerals, and other essential nutrients. Oyster mushrooms contain several compounds believed to provide health benefits. These include beta-glucan fiber, which helps maintain heart health and boost immunity, is rich in antioxidants, improves cognitive health, reduces the risk of cancer, and helps control blood sugar levels. These various benefits have attracted many people to cultivate them.

Oyster mushroom cultivation has many advantages, including: 1) very little capital, especially if you already have your own space and mushroom house; 2) the potential for substantial profits; 3) the cultivation process is relatively short, taking approximately four months from seeding to harvest, resulting in a relatively quick turnover; 4) oyster mushrooms are a favorite food in Indonesia due to their delicious taste and high nutritional value; 5) the market is very large, making them easy to market. They can be sold directly to consumers, consigned to stalls or vegetable vendors; and 6) they can be a potential side business opportunity.

These reasons motivated Mr. Asmari to cultivate oyster mushrooms. He opened his oyster mushroom cultivation business in April 2022. Mr. Asmari is a retired employee of BRI, born in Jember on December 10, 1966. He currently resides in the Tukum Indah Housing Complex No. 8, RT 03, RW 16, Tukum Village, Tekung District. His business is located on Jalan Mahakam, RT 01 RW 13, Jogotrunan Village. Mr. Asmari's initial goal in establishing this business was simply to cultivate oyster mushrooms. Over time, he developed a noble ideal: to improve the well-being of the people around his business premises, providing them with additional income. He also aspired to create processed products using oyster mushrooms, and he recruited skilled workers to process these products.

As if Mr. Asmari's efforts to improve the welfare of the local population were not optimal, this business has developed more innovatively. Not only satisfied with cultivating and processing oyster mushroom-based products, Mr. Asmari is also engaged in nurseries, making planting media, cultivating, processing products, and trying to provide oyster mushroom education to the community in need. Every business aims to obtain maximum profits and hopes for further growth, therefore, a feasibility assessment of this oyster mushroom business is necessary. The importance of a feasibility study for a business includes: 1) avoiding financial risks; 2) facilitating planning; 3) facilitating work implementation; 4) facilitating supervision; and 5) facilitating control (Kasmir, 2016). The results of this business feasibility study can provide benefits to several parties. Parties who need the results of a business feasibility study include: 1) investors; 2) creditors; 3) company management; 4) government and society; and 5) for economic development purposes (Husen Sobana, 2018).

A business feasibility study is an activity that studies a business that will be carried out to determine whether or not it is feasible to do business (Kasmir, 2016). According to Husen Sobana (2018) a business feasibility study is a study of a business plan that not only analyzes the feasibility of building a business, but also when it is routinely operated in order to achieve maximum profits for an unspecified time. Business feasibility is assessed based on several aspects including: 1) technical and production aspects; 2) financial aspects; 3) organizational and HR management aspects; 4) market and marketing aspects.

The technical and production aspects study the technical needs of the business, such as determining production capacity, the type of technology used, the use of equipment and machines, the business location and the most profitable location of the company, then a plan can be made for the total cost of procuring fixed assets.

The financial aspect discusses three (3) decisions in financial management, including: 1) obtaining funds (funding decisions); 2) use of funds (investment decisions); 3) asset management (dividend policy) (Brigham & Houston, 2021). Kasmir and Jafar (2012) stated that overall the assessment of

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financial aspects includes: (1) Sources of funds to be obtained. (2) Investment cost requirements. (3) Estimates of investment income and costs for several periods including the types and amounts of costs incurred during the investment period. (4) Projected balance sheets and profit/loss reports for several future periods. (5) Investment assessment criteria. (6) Financial ratios used to assess the company's capabilities (Kasmir, 2016).

Analyzing aspects of organizational management and human resources is crucial because the management of an organization is interconnected with other tasks. This management and human resources analysis involves analyzing the capabilities of prospective business owners within a planned timeline and the availability of human resources capable of managing future business activities.

Market and marketing aspects are crucial, as they determine the survival or failure of a company within its industry. Marketing essentially revolves around understanding and fulfilling customer needs and preferences. It involves identifying, anticipating, and profitably meeting customer needs (Czinkota et al., 2021).

Several previous studies on the importance of business feasibility assessment Purdianto, et al. (2021), discussed the feasibility analysis of oyster mushroom baglog production in Bandung Village, Gedeg District, Mojokerto Regency, the results showed that based on the income received by Agro Jamur Majapahit and Raffa Jaya Mushroom, stated that both businesses were feasible to continue (Purdianto et al., 2021). Fitriani, et al. (2022) discussed the application of business feasibility aspects to the food and beverage business Hundred Smoke, Malang City, the results of which Hundred Smoke was declared feasible to carry out its business based on 6 (six) aspects: environmental, legal, marketing, HR, technical and technological, and financial. Based on environmental and legal aspects, this business is not yet feasible but market and marketing, management, technical and financial aspects are feasible, so this business can be continued (Fitriani et al., 2022).

Khairudin et al. (2015) discussed the feasibility analysis (financial aspects) of oyster mushroom cultivation in Karanganyar Regency. The feasibility criteria used were Net Present Value, Internal Rate of Return, and Net Benefit Cost Ratio. An NPV value greater than zero, an IRR greater than the applicable discount rate, and a Net B/C ratio greater than one, thus concluding that this business is feasible (Khairudin et al., 2015).

Jawardhana & Aulawi (2017) conducted a feasibility study for establishing an oyster mushroom cultivation business in Garut Regency. Considerable aspects related to the feasibility of this business include: market, technical and operational aspects, management, financial aspects, and environmental aspects. The results showed that based on market aspects, Garut Regency still has approximately 60% market opportunity for establishing an oyster mushroom cultivation business. Technically and operationally, mushroom cultivation can be carried out using space around the house. Management-wise, mushroom cultivation can be managed without involving many parties. Financially, oyster mushroom cultivation can generate profits of up to 23% of the initial investment. Environmentally, oyster mushroom cultivation has a positive impact on the surrounding environment (Jayawardhana & Aulawi, 2017).

Ulva, et al (2019) analyzed the increase in profitability of oyster mushroom farmers through the development of oyster mushroom floss business. The analysis used quantitative analysis for market and marketing aspects, qualitative analysis for financial, Engineering and Technology, HR, and legal aspects. Based on these 5 aspects, the development of oyster mushroom floss business will be able to increase the profitability of oyster mushroom farmers (Ulva et al., 2020). Huda & Andoyo (2020) conducted a feasibility study test for the Kepuh Makmur oyster mushroom cultivation group in Patrol District, Indramayu Regency, the aspects analyzed included market and marketing, technical and production, organization and management, and finance. And the test results showed that based on market, technical, and organizational aspects, the Kepuh Makmur group was quite feasible to run

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an oyster mushroom cultivation business, but based on the aspects it still did not meet the criteria (Huda & Andoyo, 2020). The differences between this activity and the previous one are as follows:

Tabel 1. Differences from Previous Activities

Aspects	Previous Research/Service	This Service Activity
Analyzed Business Conditions	The oyster mushroom business is generally stable, productivity is good, the environment is supportive.	Partner businesses experience real problems, such as drastic production drops and hot locations.
Approach Used	Focus on feasibility analysis (technical, market, financial, management).	Using comprehensive mentoring, including business management, education, monitoring, and continuous evaluation.
Scope of Work Studied	Usually only one focus: cultivation, baglog production, or market aspects.	It includes nurseries, baglogs, cultivation, processed products, and education, so that it is more comprehensive.
Partner Roles	Usually as an object of research.	Partners as active subjects, involved in training, discussions, and solution determination.

METHODS

Community service activities were carried out in December 2023, and were divided into several stages: (1) planning stage; (2) implementation stage; (3) completion method; (4) activity design (Firmansyah et al., 2019).

a. Planning Stage

In this stage, partners' problems are identified through observation and preliminary interviews. This activity is crucial for planning a feasibility testing and business development assistance program. This activity begins with developing an activity proposal, initial discussions with business owners about problems and expectations, and then designing the activities and methods for feasibility testing and business development assistance. This activity is expected to assist business owners in running and developing their businesses going forward.

b. Implementation stage

The limitations of this business owner are in assessing aspects of business feasibility and development from 4 (four) aspects, including: 1) technical/production aspects; 2) financial aspects; 3) organizational and HR management aspects; 4) marketing aspects, so they need a simple and affordable solution. Lecturers at the Widya Gama Lumajang Institute of Technology and Business who received full support to carry out community service activities, tried to provide a simple solution to the wishes of business owners in developing their businesses. Several steps were determined in this service activity to answer the partner's problems as follows:

1) The first step, which was agreed to seek solutions to existing problems, includes providing business management assistance.
2) The second step, assistance in assessing business feasibility from a technical/production, financial, organizational and HR management, as well as market and marketing perspectives..
3) The final and equally important step is monitoring and evaluation by the team of Lecturers at the Widya Gama Lumajang Institute of Technology and Business until partners can independently run their businesses well and are able to make assessments of business feasibility and development based on legal, technical/production, financial, organizational and HR management, and market and marketing aspects. The implementation of this monitoring and evaluation does not only stop at the service program period, but these monitoring and evaluation activities are carried out continuously through community service

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programs implemented and developed by the Widya Gama Lumajang Institute of Technology and Business.

All these stages require quite patient, serious and intensive guidance so that the enthusiasm that has been built does not decline because the real challenges in the real competition that will be faced are not easy.

c. Completion Method

The implementation method that will be carried out to resolve partner problems consists of the following steps:

1) Business Management Assistance
   This business management assistance aims to prepare partners to manage their businesses effectively and sustainably.
2) Assistance in Business Feasibility Assessment
   This assistance is intended to assess business feasibility and development.
3) Monitoring and Evaluation
   An equally important process is monitoring and evaluation, which will be carried out periodically until partners can independently run their businesses sustainably so that the overall goals, targets, and outputs of this community service activity can be achieved well.

Mentoring according to Muhammad (2024) is described as a nurturing process in which a more skilled or experienced person acts as a role model, teaches, sponsors, encourages, counsels, and befriends a less experienced person to promote their development. (Muhammad, 2024). The process includes planning, action, observation, and reflection, which has proven effective in increasing the skills and engagement of participants. (Baharudin et al., 2021).

d. Activity Design

The first activity was designed by conducting observations and interviews with partners who in this case are the owners of oyster mushroom cultivation businesses located on Jalan Mahakam RT 01 RW 13, Jogotrunan Village, Lumajang District, Lumajang Regency, because to carry out this activity well, it will really require full support from partners to provide an understanding of the importance of the benefits of this community service activity for partner businesses, especially support in terms of time, energy and thoughts where partners must focus on carrying out this activity and spend their time.

The second activity is preparation for business management assistance and feasibility assessments, as well as how to develop a business. The material will be prepared and delivered by lecturers from the Widya Gama Lumajang Institute of Technology and Business. The third activity is designed to provide assistance, monitoring, and evaluation to help provide solutions to problems that occur, until the partners are truly independent and can run their businesses well and sustainably. This activity will be held at the partner's business premises on Jalan Mahakam RT 01 RW 13, Jogotrunan Village, Lumajang District, Lumajang Regency. This 6-day activity (December 4–9, 2023) was attended by 6 participants, consisting of the business owner, assistants, 2 staff in packaging and product innovation, 1 staff for oyster mushroom baglog preparation, and 1 staff for seed production. The program focused on mentoring for business feasibility assessment across four areas: (1) Engineering and production—covering warehouse and production processes; (2) Market and marketing—regarding product target markets; (3) Organization and human resources—strengthening business management; and (4) Finance—evaluating investment criteria such as payback period, net present value, profitability index, and internal rate of return.

RESULTS AND DISCUSSION

Based on the agreement from the partners, this community service activity will be carried out for 2 days on December 9-10, 2023. With the provision of December 9, 2023 to provide knowledge to partners regarding business management, followed by providing knowledge on assessing the feasibility of a business from a technical/production aspect, financial aspect, organizational and HR

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management aspect, market and marketing aspect on the following day. Furthermore, providing knowledge on business development based on the aspects mentioned above.

Business Management

At this stage, knowledge regarding business management is provided. This is done by providing material and understanding of business management by expert lecturers from the Widya Gama Lumajang Institute of Technology and Business, especially for the business currently being pursued by the partners. This is then followed by a question and answer session between the partners and the presenters. The mentoring here begins with an explanation of the importance of managing a business. According to Lina Nur Hidayati, a lecturer at the Faculty of Economics and Business, Yogyakarta University, some of the benefits obtained from business management include: 1) choosing a feasible business; 2) having a business with a clear legal entity; 3) having financial reports (useful for business continuity, optimal profits, credit applications); 4) having a clear business development and operational plan.

The stages required to carry out business management are as follows: 1) identifying business opportunities; 2) business planning; 3) marketing planning. As the partner is a retired BRI employee, he is already well-versed in all these stages. Therefore, this stage is simply intended to reinforce business management concepts to ensure the sustainability of the business. This activity also focuses on exchanging ideas, as the presenter and business owners (partners) have differing experience in business management.

On this occasion, effective business management tips were also presented, including: 1) establishing clear business objectives; 2) establishing a marketing strategy; 3) recruiting professional and competent employees; 4) thorough financial planning; 5) utilizing technology. Business management is not limited to these five aspects, but rather encompasses the management of all areas within every business, including: 1) human resource management; 2) marketing management; 3) production management; 4) financial management; 5) information management; 6) strategic management. 7) Operations management (https://www.ruangmenyala.com/article/read/5-tips-manajemen-usaha-untuk-kembangkan-bisnis-wajib-tahu-2). Although the partner is someone who understands business management for the company, for the oyster mushroom business, how to develop it, including how to test its feasibility, is new, so the partner is very cooperative and enthusiastic about managing the business.

Business Feasibility Assessment Technical/Production Aspects

a. Location

Mr. Asmari's mushroom cultivation business is located on Jalan Mahakam RT 01 RW 13, Jogotrunan Village, Lumajang District, Lumajang Regency, with an area of approximately 1,140 m2. This location is located west of the gas station and is quite far from residential areas, the reason is that when making the planting medium by making sawdust does not cause noise to local residents. Access to the location is not difficult at all because it is close to the main road. Access to electricity and water is very easy, the cool atmosphere is very suitable for the growing conditions of oyster mushrooms. The parking lot is spacious enough for 10 motorbikes and 1 car.

b. Kumbung House

Mr. Asmari's mushroom house measures approximately 10 x 25 m with a height of 6 m, with a tiled roof and brick walls. However, fresh air easily enters because the roof does not use asbestos, thus accelerating the growth of oyster mushrooms. The lighting is sufficient and the entrance and exit (door) of the mushroom house is wide, making it easy to harvest and check the condition of the baglog and oyster mushrooms every day. There are approximately 2,000 baglogs (oyster mushroom growing media). The condition of the mushroom house can be seen in the following picture.

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Figure 1 Condition of the East Mushroom House
Source: Mr. Asmari's Business

Ideal growth conditions are maintained at a temperature of 22-28oC with a humidity of 90-95%. The shelves are made in 7 levels with a length of 6 m x 4 m. The distance between the fields in each shelf is 40 cm and the distance between shelves is 110 cm. The capacity of the mushroom house of that size is a maximum of 50,000 baglogs. The production cost to set up this cultivation business is approximately Rp. 53,295,000,- for the mushroom house + shelves. For Mr. Asmari's baglogs, he produces them himself with an average cost per baglog of Rp. 2,500,-. So the cost of making the baglogs is approximately Rp. 5,000,000,-. The price of the machine used to heat the planting media material is approximately Rp. 5,000,000,-.

c. Production Capacity

The main factors influencing the production capacity of oyster mushroom cultivation consist of external and internal factors. External factors consist of weather and seasons as well as demand constraints while internal factors include the number of workers used, the ability and expertise of the workforce, financial capacity, company management, the number of baglogs, work equipment used, maintenance of tools and materials, product defect rates, waste in the production process, supply of raw materials and supporting materials and work productivity. The initial production of Mr. Asmari's oyster mushroom cultivation used 2000 baglogs, the first harvest obtained 5 kg. Maximum oyster mushroom production was achieved at the 10th harvest, at 10 kg. Production during the last three months, August–October, only reached approximately 1 gram per baglog. Mushroom production has recently declined, likely due to a lack of rainfall (necessary for producing truly high-quality mushrooms). As we know, the rain hasn't fallen according to the season for the past few months, impacting the harvest.

Mr. Asmari's business extends beyond oyster mushroom cultivation to include food products made from oyster mushrooms. This means he sells not only fresh oyster mushrooms but also a variety of popular dishes (mushroom geprek, mushroom satay, crispy mushrooms, spicy mushrooms, mushroom sempol, and mushroom katsu). He also operates an oyster mushroom nursery, which, if the weather is favorable, would be successful. However, the lack of rain in recent months has impacted both the nursery and the oyster mushroom cultivation.

The problems that exist in this business, and Trubus suggests several modifications, including (Swadaya & TRUBUS, 2016):

1. Build a mushroom barn with an open-close circulation system. This means closing the mushroom barn during the day to maintain humidity, and opening it at night to keep the room temperature cooler.
2. Use a roofing material that doesn't absorb heat. This is important to prevent excessive sunlight from entering the mushroom barn. Some materials that can be used for roofing include woven bamboo or roof tiles.

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3. Humidity is a key requirement for oyster mushroom cultivation, as air humidity significantly impacts mushroom growth. To address this, place several barrels/containers of water in the mushroom barn to increase humidity. Another method is to install a humidity meter to monitor the room's RH. If the room's RH is low, water the area around the mushroom barn to raise it to optimal levels.
4. Because the mushroom cultivation area is located in a hot area, try to build the mushroom barn in a shaded area, close to trees. The height of the mushroom barn should not be less than 4 meters. Protect the area around the mushroom barn from direct sunlight.
5. Pay attention to the storage racks for the mushroom bags you've created. In colder areas, the mushroom barn's shelves should be up to five levels high. In hotter areas, ensure no more than three levels high.
6. Because the mushroom barn is located in a hot area, water the mushroom bags more frequently than in mountainous areas. Water the mushroom bags at least three times a day.

Business Feasibility Assessment from a Financial Aspect

The investment costs for oyster mushroom cultivation include the construction of mushroom sheds, baglogs, land purchases, and working capital. The oyster mushroom harvest for 3 months produced 660 kg, with an average monthly productivity of 220 kg/month. The oyster mushroom harvest per baglog according to the baglog supplier is 425 grams/100 days or 255 kg/month 2000 baglogs, so based on this, the productivity percentage of Mr. Asmari's Oyster Mushroom Cultivation Business is 87.18%. Oyster mushrooms are sold to collectors at a price of Rp. 13,000 per kg, so the total income received is Rp. 8,580,000. The existing financial feasibility analysis of Mr. Asmari's oyster mushroom business can be seen in table 1. This analysis provides an allocation to pay 1 employee of Rp. 30,000 per day for each employee.

Table 2. Financial Analysis of the Existing Condition of Mr. Asmasri's Business

Investment Costs	**Amount (Rp)**
Tanah	2.280.000.000
Rumah Kumbung + Rak	53.295.000
Peralatan	5.000.000
Total	2.338.295.000
Depreciation expense per year	4.289.750
Variable Costs per 1 harvest season (3 month)	
Baglog (2000)	5.000.000
Nutrisi	34.000
Listrik	200.000
Gaji Karyawan (1 person) 90 day	2.700.000
Transportasi	100.000
Total	8.034.000
Cost But per 1 harvest season (3 month)	
Penyusutan Mesin	156.250
Penyusutan Bangunan + Rak	916.188
Total	1.072.438

Cash Flow			
Description	**Month 1 (Rp)**	**Month 2 (Rp)**	**Month 3 (Rp)**
Income			
Penjualan jamur tiram	2.860.000	2.860.000	2.860.000
Expenditure			
Total Expenditure	8.391.478	357.480	357.480
Net Benefit	-5.531.478	2.502.520	2.502.520
Komulatif Net Benefit	-5.531.478	-3.028.958	-526.438

Source: Mr. Asmari's business and data processing

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Based on Table 1, the cash flow for oyster mushroom cultivation with 2,000 baglogs is still considered economically unfeasible. Revenue generated from oyster mushroom sales is still smaller than total expenses, with a minus Rp. 526,438 in the third month. Further feasibility analysis of the business is no longer effective. Several factors that make this business economically unfeasible are harvest productivity and the number of baglogs cultivated. The difference in harvest productivity of 12.82% has a direct impact on total revenue. Meanwhile, increasing the number of baglogs in the mushroom barn can increase employee productivity, as the number of 2,000 and 3,000 baglogs can be handled by the same number of employees, based on an interview with the owner of the oyster mushroom cultivation business (Mr. Asmari).

Recommendation Analysis

Recommendations are based on an analysis of existing conditions, where the number of baglogs at the start of cultivation is increased to the minimum required to make oyster mushroom cultivation economically viable. The number of baglogs is increased from 2,000 to 3,000, and harvest productivity is adjusted to the baglog supplier's yield of 425 grams per 100 days per baglog. With other technical assumptions remaining the same as in the existing conditions, the recommended cash flow analysis is presented in Table 2.

Table 3. Financial Analysis of Mr. Asmari's Business Recommendations

Investment Costs			**Amount (Rp)**
Tanah			2.280.000.000
Rumah Kumbung + Rak			53.295.000
Peralatan			5.000.000
Total			2.338.295.000
Depreciation expense per year			4.289.750
Variable Costs per 1 harvest season (3 month)			
Baglog (2000)			7.500.000
Nutrisi			51.000
Listrik			200.000
Gaji Karyawan (1 person) 90 day			2.700.000
Transportasi			100.000
Total			10.551.000
Cost But per 1 harvest season (3 month)			
Penyusutan Mesin			156.250
Penyusutan Bangunan + Rak			916.188
Total			1.072.438
Cash Flow			
Description	**Month 1 (Rp)**	**Month 2 (Rp)**	**Month 3 (Rp)**
Income			
Penjualan jamur tiram	4.972.500	4.972.500	4.972.500
Expenditure			
Total Expenditure	10.908.478	357.480	357.480
Net Benefit	-5.935.978	4.615.020	4.615.020
Komulatif Net Benefit	-5.935.978	-1.320.958	3.294.062

Source: Data Processing

Based on Table 2, the increase in the number of baglogs and harvest productivity directly increased the income of this business. The oyster mushroom harvest for 3 months reached 1,147.5 kg, with a selling price of Rp 13,000,- the income received was Rp 14,917,500,-. In the 3rd month after deducting expenses, a profit of Rp 3,294,062 was obtained. Further investment feasibility analysis is needed to assess the extent to which this oyster mushroom cultivation business is feasible to be a sustainable business. The total investment of Rp 68,953,248,- consists of, the construction of a mushroom barn + shelves, machines for making baglog materials and working capital for 3000

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baglogs with an investment period of 4 years. The desired interest rate return is 30%. Cash flow during the economic life is presented in Table 3. During 1 year, there are 4 baglog replacement cycles where every 3 months as many as 3000 oyster mushroom baglogs are cultivated. The harvest of a total of 12,000 baglogs for 1 year produces 4,590 kg of oyster mushrooms, resulting in an income of Rp 59,670,000 per year. Determining whether an investment is feasible from a financial aspect requires several measurements of certain criteria. The criteria used in this business feasibility analysis are Payback Period, Net Present Value, Internal Rate of Return, and Profitability Index. Table 4 shows the results of measurements of these business feasibility criteria. Payback Period (PP) is an assessment technique for the time period (period) of return on investment of a project or business. This calculation can be seen from the net cash proceeds (proceeds) obtained each year. Net cash value is the sum of profit after tax plus depreciation. To assess whether a business is feasible from a PP perspective, one requirement is that the current PP is less than the investment life. The PP measurement for this business is 2 years and 5 months, which is less than the investment life of 5 years, so it can be considered feasible based on the PP criteria.

Table 4. Recommended Cash Flow During the Economic Life of an Oyster Mushroom Business

Cash Flow					
Description	Year 1	Year 2	Year 3	Year 4	Year 5
Income					
Penjualan Jamur Tiram	59.670.000	59.670.000	59.670.000	59.670.000	59.670.000
Total Income	59.670.000	59.670.000	59.670.000	59.670.000	59.670.000
Expenditure					
Cost of Operasional					
Cost of Variable	42.204.000	42.204.000	42.204.000	42.204.000	42.204.000
Cost of Fixed	4.289.752	4.289.752	4.289.752	4.289.752	4.289.752
Total Expenditure	46.493.752	46.493.752	46.493.752	46.493.752	46.493.752
Income Before Tax	13.176.248	13.176.248	13.176.248	13.176.248	13.176.248
Tax (10%)	1.317.625	1.317.625	1.317.625	1.317.625	1.317.625
Income After Tax	11.858.623	11.858.623	11.858.623	11.858.623	11.858.623
Depreciation	4.289.750	4.289.750	4.289.750	4.289.750	4.289.750
Proceed	16.148.373	16.148.373	16.148.373	16.148.373	16.148.373
DF 30%	0,770	0,592	0,455	0,350	0,269
Present Value of Proceed	12.434.247	9.559.837	7.347.510	5.651.931	4.343.912

Source: Data Processing

Net Present Value (NPV) is the ratio of the net cash value (PV of Proceed) to the investment value (PV of Capital Outlays) over the life of the investment. The difference between these two PVs is known as the net present value (NPV). To calculate NPV, the net cash value (PV) is required. The net cash value (PV) can be found by calculating the company's cash flow over a specific investment life.

Table 5. Oyster Mushroom Cultivation Investment Assessment Criteria

Measuring instrument	Measurement results	Standard	Conclusion
Investment Amount	Rp 68.953.248	-	-
Investment Age	4 years	-	-
Payback Period	1 year 2 month	5 years	Feasible
Net Present Value	-29.615.811	Negatif	Not Feasible
IRR	7,9%	< 30%	Not Feasible
Profitability Index	-0,43	< 1	Not Feasible

Source: Data Processing

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Based on the investment criteria calculations, the NPV is negative, the IRR is lower than the provisions, and the PI is less than 1 and the value is negative, so based on the financial aspect, Mr. Asmari's oyster mushroom business is still not feasible.

Business Feasibility Assessment of Organizational and Human Resource Management Aspects
The workforce in this oyster mushroom cultivation business is Mr. Asmari's neighborhood members who used to be a driver for a certain travel business. He and his family are grateful because after working at Mr. Asmari's business, the family has never been left out of town again. The organizational structure of Mushroom Cultivation can be seen in Figure 4.

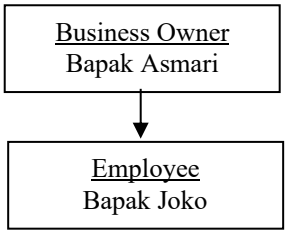

Figure 2. Organizational Structure
Source: Mr. Asmari's business

In addition to permanent workers, oyster mushroom cultivation businesses often employ contract workers. The division of labor into two types: permanent workers are needed for tasks that require specialized skills, such as maintenance and watering, inoculation and seed measurement, and medication and nutrition. This is because permanent workers have undergone training, while contract workers are needed for simpler tasks such as packaging, mixing, harvesting, distribution, and marketing. If this business is to grow, in the future, it will require contract workers from the surrounding community to absorb labor and help create jobs.

Training for employees was conducted for one day before the cultivation began. The training was conducted at the Manut Oyster Mushroom Farmers Group (KPJT) on Jalan Tambak Boyo, Klakah District, Lumajang Regency. Records for the number of products produced were already in place, but they were not yet properly organized and recorded. Meanwhile, cash flow records were still lacking, so the business owner had not yet properly assessed the business's financial condition, such as investments in purchasing additional baglogs, improving facilities, and other things that are necessary to build the independence and sustainability of this business.

Business Feasibility Assessment for Market and Marketing Aspects
In general, marketing channels can be divided into two, namely: direct marketing channels and marketing channels through intermediaries. If marketing is done directly, the price received by the producer is the same as the price paid by the consumer. Thus, producers will get a fair price while consumers have high purchasing power. In addition, consumers also get fresh products, while marketing through intermediaries will involve other traders (Zikri et al., 2015). In general, the marketing of oyster mushroom products is focused on traditional markets. Mr. Asmari's mushroom marketing is carried out through agents/collectors who will then be sent to the Lumajang Market. After harvest, the mushrooms are cleaned, weighed, and sent to the market on the same day as seen in Figure 5. However, currently, oyster mushrooms are marketed not only in fresh form but have been processed into snacks that are favored by many people in general and school children in particular. This presents an opportunity so it is hoped that the planned production scale can meet this demand. Oyster mushroom cultivation produces Fresh Oyster Needles and Oyster Mushroom derivative products such as crispy mushrooms, oyster mushroom katsu, mushroom satay, mushroom geprek, mushroom sempol, and many other processed products. Based on market analysis of the oyster mushroom cultivation business, it was concluded that this business is feasible to continue

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because it is a supplier to traditional markets in the Lumajang District area, although not the only one.

Figure 3 Packaging Before Sending to Customers
Source: Mr. Asmari's business

Figure 5. Oyster mushroom packaging before being sent to customers. Future plans include expanding into processing other mushroom products beyond those mentioned above. Processing raw materials into processed products will increase their added value, thus increasing their selling price (Ihromi et al., 2020). Mr. Asmari sells oyster mushrooms for Rp 13,000 per kilogram. This price reflects the market price and is agreed upon by oyster mushroom business owners in Lumajang. This activity is only in the form of assistance on the results of the feasibility assessment of this oyster mushroom cultivation business, so the conclusions that we can give are as follows:

Table 6. Summary of Oyster Mushroom Business Feasibility Assessment

Aspects	Assessment Results	Recommendations
Engineering and Production	It is strategically located, easily accessible, close to highways, and has adequate electricity and water facilities. It is far from settlements so that it does not cause noise pollution during the processing of planting media. The environment is cool and supportive enough for oyster mushroom cultivation.	Proper

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	The land area is ±1,140 m² and the parking area is adequate.	
Markets and Marketing	Direct marketing: Products are shipped directly to consumers or agents are fresh so as to maintain quality and provide reasonable prices for producers and consumers. Marketing through intermediaries: Mr. Asmari works with agents/collectors who distribute mushrooms to Lumajang Market. This system expands market reach and ensures products are sold every day.	Proper
Organization and Human Resources	Businesses employ permanent workers from the surrounding environment, including former travel drivers who can now work without having to travel far, thus having a positive social impact. The business organizational structure has been formed and describes a clear division of responsibilities.	Less worthy
Finance	NPV negative, The IRR is well below 30%, Profitability Index < 1, Payback Period is not eligible, indicates that the business does not provide an adequate return on the investment invested.	Not Economically Feasible

CONCLUSION

After conducting an assessment and analysis of business feasibility, it shows that based on technical and production aspects, organizational management and HR aspects are feasible or meet the business feasibility criteria, while based on financial aspects only meet the payback period method while net present value, internal rate of return, and profitability index are still not met because this business has only been established for 1 year when this assessment was conducted. For market and marketing aspects, they are less than satisfactory because the targets and objectives do not meet sales expectations.

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