

FEASIBILITY STUDY OF OYSTER MUSHROOM CULTIVATION IN MOJOKERTO CITY

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ABSTRACT

*Oyster mushroom also known as *Pleurotus ostreatus*, "Hiratake", "shimeji" and "houbitake" (Sanchez, 2010) is one of the many types of fungi that can be consumed. In general, the mushroom contains 90% water and 10% other dry substances (Morais, et al., 2000). In the development of this oyster mushroom cultivation business, business owners are using mushroom seed strain Florida. The reason business owners are using this type of seed is because it is suitable for all kinds of manufacturing kinds of foods made from oyster mushrooms in Indonesia. In this study, researchers conducted a feasibility study of oyster mushroom cultivation seen from several aspects: legal, market and marketing aspects, technical aspects and technology, management and human resources, as well as the financial aspect. The urgency of research of the feasibility study is partly because the oyster mushroom producers in Mojokerto is still quite a bit while demand is increasing oyster mushrooms. This prompted researchers to develop business Oyster Mushroom Cultivation Sooko in Mojokerto. In addition oyster mushroom has many benefits for the oyster mushroom has a delicious taste and contains few calories (Aishah and Wan Rosli, 2013). In addition oyster mushroom is easy to be cultivated in any area (Noorlidah, Uddin, Borhannudin, 2013).*

Keywords : *Feasibility Study, Oyster Mushroom, Cultivation, Sooko Mojokerto*

INTRODUCTION

White oyster mushroom (*Pleurotus Florida*) is a type of mushroom consumption are popular in the market because of high nutrient content and easy to be cultivated. This kind of mushroom contains a lot of protein, phosphorus, iron and calcium when compared to other types of mushrooms (Djajanegara and Harsoyo, 2008). In the oyster mushroom, there are some beneficial properties for health, among others: As an anti-cholesterol, antioxidant and antitumor because it contains nutrients, some of which are fat, minerals and a variety of vitamins and fiber, folic acid content in the oyster mushroom to prevent cancer and to cure anemia. Besides good for pregnant women because it can reduce birth defects and brain defects in children (Rahmat and Nurhidayat, 2011: 19), the fat content in the oyster mushroom is mostly unsaturated fat. In addition oyster mushrooms also contain active compounds that can lower lovastatin cholesterol (Piryadi, 2013: 10). Thus oyster mushrooms unfit for consumption. In Table 1.1 are presented

data on the number of oyster mushroom demand in several major cities in Indonesia in 2012 (Piryadi, 2013: 14):

Table 1. Total demand of oyster mushroom in 2012

No	City	Needs per Day (kg)
1	Jabodetabek	20.000 – 25.000
2	Cianjur	1.500 – 2.000
3	Sukabumi	1.750 – 2.000
4	Bandung	7.500 – 8.500
5	Semarang	500 – 1.000
6	Yogyakarta	1.000 – 2.000
7	Malang	1.500 – 1.750
8	Surabaya	1.500 – 2.000

Based on data in Table 1.1 of the oyster mushroom production needs and the high number of requests oyster mushrooms on the market, the researchers plan to open the oyster mushroom cultivation with the aim to increase the number of requests oyster mushroom production in East Java and the surrounding region. For the moment oyster mushroom cultivation in East Java is in the area of Surabaya, Sidoarjo, Mojokerto, Pasuruan, Malang, Blitar, Madiun, Jombang and Banyuwangi.

Entry barrier for oyster mushroom cultivation business is relatively low because in addition to the capital required is not so great, supplier of seed maker or oyster mushrooms seed readily available at an affordable price. In Table 1.2 below will be presented the supplier data of oyster mushroom seed based author's data:

Table 2. Supplier data of oyster mushroom seed

No.	Supplier	Location	Price per Seed
1	Nur Soleh	Belakang lokasi wisata Ubalan Pacet	Rp. 2.500,-
2	Ratna Novita	Dsn Kebangsoe no. 159, Ds. Petak, Pacet	Rp. 2.300,-
3	Taufik Mikhrozin	Dsn Kembangsoe no. 01, Ds. Petak, Pacet	Rp. 2.000,-
4	Eko	Jalan Brawijaya 362 Mojokerto	Rp. 2.750,-
5	Opik	Pacet Mojokerto	Rp. 2.550,-

The urgency of research of the feasibility study is partly because the oyster mushroom producers in Mojokerto is still quite a bit while demand is increasing oyster mushrooms. This prompted researchers to develop business Oyster Mushroom Cultivation Sooko in Mojokerto. In addition oyster mushroom has many benefits for the oyster mushroom has a delicious taste and contains few calories (Aishah and Wan Rosli, 2013). In addition oyster mushroom is easy to be cultivated in any area (Mostak, *et al.*, 2013). Aishah and Wan Rosli (2013) reported that *Pleurotus ostreatus* is a type of fungus that ranks second in terms of mushroom cultivation worldwide. Meanwhile, according to (Josephine, 2015) oyster mushroom (*Pleurotus spp*) is ranked third after the white button mushrooms and shiitake mushroom production in the world. In this study, researchers conducted a feasibility study of oyster mushroom cultivation seen from several aspects: legal, market and marketing aspects, technical aspects and technology, management and human resources, as well as the financial aspect.

LITERATURE REVIEW

Feasibility Study

Sangree (2012) in the journal argued about the feasibility study as a measure to determine the feasibility of developing a project from the aspect of economy. Hassan (2013) suggested a feasibility study as a tool that offers technical, economic and financial in making a decision to estimate the investment of a business project that will be done. From some of these definitions can be concluded that the feasibility study is a detailed study conducted on a business idea to analyze all the things that will happen so that the business idea is feasible to run and bring benefits.

Legal Aspect

Feasibility legally means determine the feasibility of a proposed system in accordance with legal requirements such as data protection measures or legal social media (Mukund, 2015). It can be concluded purpose of the legal aspects of the business feasibility study is to analyze the various procedures and licensing business so that the business is feasible in terms of its legal.

Market and Marketing Aspect

Market and marketing aspects aims to determine the structure and market opportunities that businesses can determine the marketing strategy to be used (Kasmir and Jakfar, 2012: 42). Analysis of the market aspects of a business regarded as a scientific tool to obtain relevant information about the reality of the state of the proposed market (Abou-Moghli and Al-Abdallah, 2012). From some opinions on the above it can be concluded that the purpose of the market and marketing aspects is to find a marketing strategy so that it can be analyzed how much the market will enter, how many products will be produced, how big prospects and opportunities in the market and know the advantages and disadvantages of competitors. To find out the requirements necessary analyzes such marketing; Segmenting, Targeting and Positioning (STP) and the Marketing Mix.

Technical and Technology Aspect

Technical and technological aspects determining product design, machinery and equipment chosen and required material (Moses and Chimezie, 2014). Technicalities of a project is feasible can be seen from the technical capabilities of the organization, the availability of skilled staff and appropriate facilities (Hoffman, 2013). Referring to the multiple definitions of the above, it can be concluded objectives of the feasibility analysis of the technical and technological aspects of a business idea is to determine the readiness of the company to prepare a few things: the accuracy of location, layout determination of the election, the sheer scale of the production of machinery and equipment as well as the selection of the technology to be used so that can achieve operating efficiencies.

Management and Human Resource Aspect

Feasibility on human resources aspect can be seen in the quality of resources and the amount of resources needed to complete a project effectively (Hoffman, 2013). Project management is a system for planning, implementing and supervising the construction of the project with efficient (Kasmir and Jakfar, 2012: 169). Based on some of the above definition can be concluded purposes of analysis and human resource management aspects of the feasibility study is to plan and oversee the project development process and business ideas that correspond to human resources owned by a company.

Financial Aspect

Financial aspects aims to analyze incoming and outgoing cash flows, the cost implications, capital requirements, profit and loss (Moses and Chimezie, 2014). Financial aspects of the business feasibility study aims to prepare the capital to be used in conducting business with a favorable rate of return (Suliyanto, 2010: 184). Researchers used several methods to analyze the feasibility of investing: Payback Period (PP), Net Present Value (NPV), Profitability Index (PI), Internal Rate of Return (IRR), Scenario Analysis.

RESEARCH METHODS

Place and Time of Research

The study was conducted in the oyster mushroom cultivation researcher at Prof. Dr. Soekandar Street, Sooko in Mojokerto. The reason the researchers chose a place to study because of the passage of oyster mushroom cultivation are in these locations. When the study of the month February 2014-July 2015.

Analysis Unit

The unit of analysis to be used in this study are as follows: supplier of oyster mushroom seed, farmer of oyster mushroom, sellers based foods oyster mushrooms, sellers of oyster mushroom in traditional markets.

Methods of Data Collection and Analysis

Legal Aspect

Analysis of the data used in the legal aspect is qualitative analysis. This method is used to test the extent of oyster mushroom cultivation can meet business licensing and permitting completeness location.

Table 3. Data source of legal aspect

Type of Data	Information
Primary	The response from the public about the location of a business idea that will be executed
Secondary	Location permits and business licenses

Market and Marketing Aspect

Analysis of the data used in the market and marketing aspects are quantitative analysis. This method is used to analyze the request (demand) and supply (supply) to determine the amount of demand and supply on the oyster mushroom will be produced later. With secure data so researchers can determine the most appropriate marketing strategy through analysis of STP and marketing mix.

Table 4. Data source of market and marketing aspect

Indicator	Information
STP (<i>Segmenting, Targeting, Positioning</i>)	Business owner able to set the segment, a target, and the position of the industrial market and the traditional market.
Marketing Mix (<i>Product, Price, Place, Promotion</i>)	Business owner is able to assign the most appropriate strategy regarding product, price, place and promotion efforts oyster mushrooms.

Technical and Technology Aspect

Table 5. Data source of technical and technology aspect

Indicator	Information
Location	Selection of the business location that does away with the availability of raw materials, availability of labor and adequate transportation.
<i>Layout</i>	Design of place of oyster mushrooms should be able to retain moisture and oyster mushrooms can prevent pests.
Production Scale	Planning of production scale in accordance with the availability baglog oyster mushrooms, availability of employees and the amount of demand.
Technologi	The use of sparkling water to keep the indoor temperature and humidity sealer for sealing plastic.

Management and Human Resource Aspect

Table 6. Data source of management and human resource aspect

Indicator	Information
Business Owner	Initiate and carry out business in accordance with the planned time (beginning July 2014).
Competent Workforce	Workers who sought labor is able to meet the specifications of the expected work.
Labor Cost	Labor costs will be determined by the costs of operations and future production.

Financial Aspect

The financial data that have been collected will then be processed to calculate the necessary capital, projected income statements, cash flow projections, the calculation Payback Period (PP), Net Present Value (NPV), Profitability Index (PI), Internal Rate of Return (IRR) , as well as scenario analysis.

Table 7. Data source of financial aspect

Indicator	Information
<i>Payback Periode (PP),</i>	Able to recoup the money invested 3 years
<i>Net Present Value (NPV),</i>	Nilai NPV > 0
<i>Profitability Index (PI)</i>	Nilai PI > 0
<i>Internal Rate of Return (IRR)</i>	Nilai IRR > BI interest rate bank guarantee of 7.5%
Scenario Analysis	Analyzing the situation worst, the situation is moderate and the best situation in which relate to various aspects, including cost of sales, purchases and expenses.

FINDINGS

Legal Aspect

Table 8. Feasibility of legal aspect

Indicator	Business Condition	Information
Owner Identity	Already have ID cards	Feasible
Recommendations of RT / RW / District	Has Obtaining permission from the RT / RW / District that this effort does not cause interference in the vicinity of the business	Feasible
Licensing letter	Letter from the ground permitting Pertahanahan Office	Feasible

Market and Marketing Aspect

Table 9. Feasibility of market and marketing aspect

Indicator	Business Condition	Information
STP	Business owners have set segmentation, target market and target market positioning	Feasible
Marketing Mix	Business owners have set up a marketing strategy by using the marketing mix	Feasible

Technical and Technology Aspect

Table 10. Feasibility of technical and technology aspect

Indicator	Business Condition	Information
Business Location	Farms have good irrigation system and clear	Feasible
<i>Layout</i>	Business owners have designed the oyster mushroom cultivation place to keep moisture and temperature and can prevent pests	Feasible
Production Scale	Business owners had planned scale of production in accordance with the availability baglog oyster mushrooms, availability of employees and the amount of demand	Feasible
Technology	Business owners can meet the technology and equipment needed	Feasible

Management and Human Resource Aspect

Table 11. Feasibility of management and human resource aspect

Indicator	Business Condition	Information
Competent Workforce	The company is able to determine the specifications of the job and a new human resources can be said to be competent if it has met these requirements	Feasible
Labor Cost	The company is able to determine the wages of workers in accordance with the operating costs and the cost of production.	Feasible

Financial Aspect

In the graph harvest oyster mushrooms Sooko (Figure 1) and turnover graph (Figure 2) it can be seen that the oyster mushroom Sooko during the period 1 (August 2014 - February 2015) have yields and low sales level. Later in the second period (May 2015 - July 2015) crops began to improve and climb that resulted in the sale of products became meningkat. At Figure 4.1 and Figure 4.2 it can be seen that the yields and sales turnover in March and April worth 0. This is because owner experienced an error in calculating the turnover process seed oyster mushrooms. Procurement process should have another oyster mushroom seeds which will be taken from the supplier, taken during the first month or two when the first harvest begins to take place. This will make the chain harvest and sale of oyster mushrooms will not give up and continue.

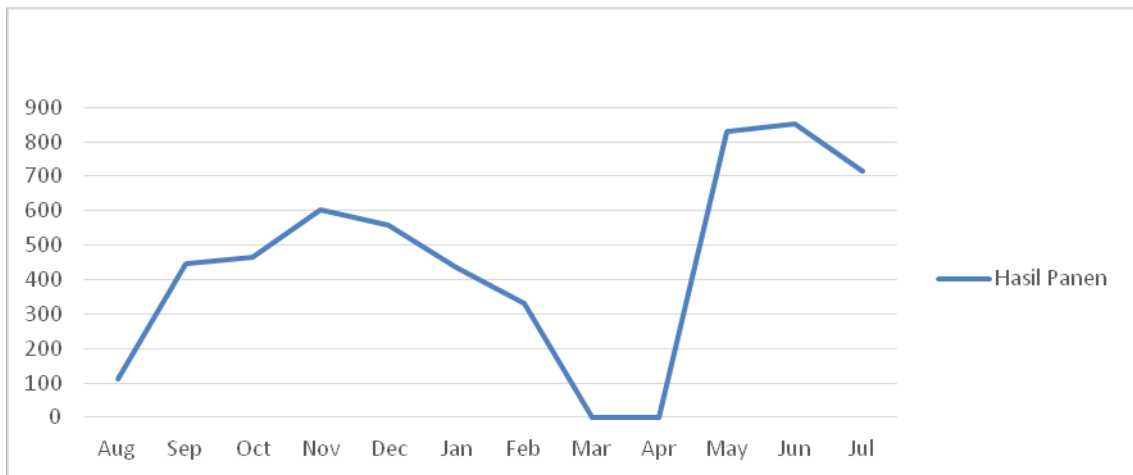


Figure 1. Harvest periods 1 and 2

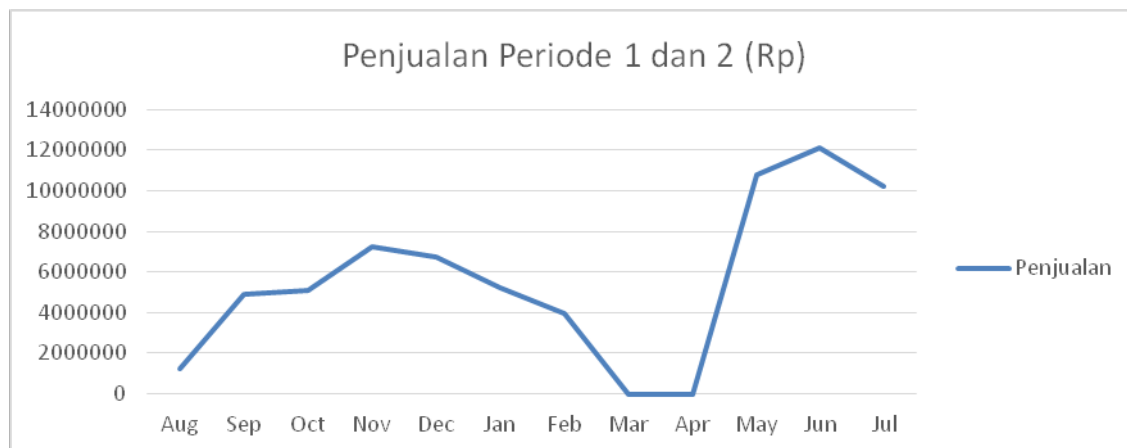


Figure 2. Sales Turnover Period 1 and 2

Table 12. Feasibility of financial aspect

Indicator	Trend Scenario	Skenario Moderat	Best Case Scenario	Worst Case Scenario
PP	≤ 3 years	1 year 3 months 15 days	1 year 2 months 12 days	1 year 4 months 25 days
NPV	> 0	Rp 269,618,818	Rp 312,518,162	Rp 226,719,475
PI	> 1	3.02	3.34	2.70
IRR	> 7.5%	82%	92%	72%
Information		Feasible	Feasible	Feasible

DISCUSSION AND CONCLUSION

Legal aspects declared eligible. As for the tax ID and business license letter and others have not been too urgent because this business is engaged in agriculture and small-scale still. For the future business owner will take care of business license and official permits from other legal entities. On market and marketing aspect, business owners have set segmentation, target market and target market positioning and business owners have set up a marketing strategy with marketing mix method. On technical and technology aspect, Farms have good irrigation system and clear, business owners have designed the oyster mushroom cultivation place to keep moisture and temperature and can prevent pests, business owners had planned scale of production in accordance with the availability baglog oyster mushrooms, availability of employees and the amount of demand. On management and human resource aspect, for a job specification is not required special individual specifications and specific experience. It just takes someone who is tenacious and honest. On financial aspect oyster mushroom Sooko financial performance during the harvest period 1 (August 2014 - February 2015) is still not stable. This happens because of the necessity of the process of introducing a product to market. In addition the owner still has not been able to maintain and control the growing period and harvest oyster mushrooms. However, in the period 2 (May 2015 - July 2015) financial performance showed significant results. This is because the owners are able to maintain and control the growing period and harvest oyster mushrooms. In addition to the second period, the owner sells fresh oyster mushrooms products in traditional markets. In addition the owners are not only selling products in the form of fresh oyster mushrooms alone but sells processed food products in the form of oyster mushrooms.

REFERENCES

- Aishah, M.S & Wan Rosli, W.I. (2013). The Effect of Addition of Oyster Mushroom (*Pleurotus sajor-caju*) on Nutrient Composition and Sensory Acceptation of Selected Wheat and Rice Based Products. *International Food Research Journal*, 20(1), 183–188.
- Djajanegara, I. & Harsoyo. (2008). White Oyster Mushroom (*Pleurotus Florida*) Mutant with Altered Antioxidant Contents. *Biotropia*, 15(1), 65–73.
- Hoffman, G. (2013). 5 Reasons to Hire A Civil Engineer'. Availabel at: <http://godfreyhoffman.com>.
- Josephine, R.M. (2015). A Review on Oyster Mushroom (*Pleurotus spp*). *International Journal of Current Research*, 7(1), 11225–11227.
- Morais, M.H. et al., (2000). Production of Shiitake Mushroom (*Lentinus Edodes*) On Ligninocellulosic Residues. *Food Sci Techol*, Int 6, 123-128.
- Moses, O. & Chimezie, O.C. (2014). Critical Feasibility Study Skills Required for Effective Entrepreneurial Development: Impications for Business Education Programmes. *International Journal of Business and Social Science*, 5(10), 211–218.
- Mostak, A. et al., (2013). Yield and Nutritional Composition of Oyster Mushroom Strains Newly Introduced in Bangladesh. *Pesq. Agropec. Bras*, 48(2), 197–202.
- Mukund. (2015). Feasibility Study - An Importan Aspects of Project Management. Available at: <http://simplilearn.com/feasibility-study-article>.
- Piryadi, T.U. (2013). *Bisnis Jamur Tiram*. Jakarta: AgroMedia Pustaka.
- Rahmat,S. & Nurhidayat. (2011). *Untung Besar dari Bisnis Jamur Tiram*. Jakarta: AgroMedia Pustaka.
- Sanchez, C. (2010). Cultivation of *Pleurotus Ostreatus* and Other Edible Mushrooms. *Appl Microbiol Biotechnol*, 85, 1321-1337.
- Sangree, D.J. (2012). Perform Market Analysis with a Feasibility Study for Indoor Waterpark Resorts and Outdoor Waterparks. *The Appraisal Journal*, 149–156.
- Suliyanto. (2010). *Studi Kelayakan Bisnis: Pendekatan Praktis*. Yogyakarta: ANDI.