

# BUSINESS FEASIBILITY STUDY FOR THE DEVELOPMENT OF PLYWOOD PLANT PT. X IN LUMAJANG

Andrew

*PT. Multi Mustika Agung*

asliandrewliem@gmail.com

<https://doi.org/10.37715/rmbe.v2i2.3406>

**Abstract-**Plywood Factory PT. X has a problem about whether the business development plan can provide viability for the company in the future. The purpose of the study was to determine the feasibility of developing the Plywood Factory business of PT. X in Lumajang in Legal Aspects, Market and Marketing Aspects, Technical and Operational Aspects, Management and Human Resources Aspects, and Financial Aspects. The research uses qualitative with interview techniques. The research sample used Saturation Sampling obtained by 1 owner from PT. X and 1 expert in the field of plywood. The result is that legal aspect is still not equipped by PT. X so it is considered not yet worthy of development. Creation of STP and 4P for market and marketing aspects. A technical and operational aspect is carried out analysis of the location of the business development, materials, machines and the required layout. Aspects of management and resources created an organizational structure and new SOPs to support development. Financial aspects are created financial scenario. Scenario 1 with only 100% local trade results in a negative value. Scenario 2 of 50% local trade and 50% of exports results in an increase of 43%. Scenario 3 of 100% export trade resulted in an increase of 291%. Based on these calculations, scenario 1 is declared unfeasible because it is considered detrimental to the company.

**Keywords:** *Feasibility, STP, PP, NPV, MARR, PI, IRR*

## 1. Introduction

Indonesia is a country with abundant natural wealth, one of which is sengon plant as the largest export commodity from Lumajang Regency. PT. X is a company established since August 31, 2018 and located in Lumajang. The company has licenses for Sengon forest business, timber industry, and other fuel retail trade. In the past, PT.X traded alternative fuels. Currently, the company produces Sengon wood sheets because the total turnover of wood sheet sales from 2018-2020 is better, amounting to RP 46.7 00,000,000. According to the Market Research Report (2021), the average annual growth rate of the plywood business is increasing by 6.1% annually from 2020-2027. Therefore, PT. X in 2021 plans to develop a business on the *veneer* production line, from wood sheet products to plywood. However, it must first be reviewed using the Business Development Feasibility Study in Legal Aspects, Market and Marketing Aspects, Technical and Operational Aspects, Management and Natural Resources Aspects, Financial and Financial Aspects, and Environmental Aspects.

## 2. Literature Review

### 2.1 Previous Research

Research by Yulianingsih *et al.*, (2019) found that market and marketing aspects as well as financial aspects deserve to be a reference for business development. Research by Oktoyadi *et al.*, (2019) found that aspects of environmental, operational, and industrial analysis are suitable for use as a reference for business development. Furthermore, Oktoyadi *et al.*, (2019) the market aspect was carried out segmentation, targeting, and positioning (STP) analysis.

### 2.2 Theoretical Foundations

#### 2.2.1 Legal Aspects

The existence of regional autonomy causes legal provisions and permits between one region and another to differ (Suliyanto, 2018). In a business feasibility study, research from legal aspects is needed with the aim of examining the validity, perfection, and authenticity of the documents owned (Kasmir & Jakfar, 2012: 24).

#### 2.2.2 Market and Marketing Aspects

Market and marketing aspects are usually the first aspects studied in a business feasibility study because a business cannot be researched if the market is not ready to accept products marketed by one company (Sucipto, 2017: 47).

#### 2.2.3 Technical and Operational Aspects

Business development requires several machines to run production. Therefore, technical aspect analysis is used to answer the question of whether the business is technically viable or not (Suliyanto, 2018).

#### 2.2.4 Management and Human Resources Aspects

Analysis of aspects of human resource management is carried out to answer businesses that are built in accordance with the time plan and the availability of human resources (Suliyanto, 2018).

#### 2.2.4 Financial Aspects

Analysis of financial aspects is carried out to determine investment plans through the calculation of expected costs and benefits such as Payback Period, Net Present Value (NPV), Profitability Index (PI), Internal Rate of Return (IRR), Scenario Analysis.

#### 2.2.5 Environmental Aspects

The possibility of business creating a negative impact on the environment, then an analysis of environmental aspects is needed to assess the level of obligations required by the company.

## 3. Research Framework

### 3.1 Analysis Models

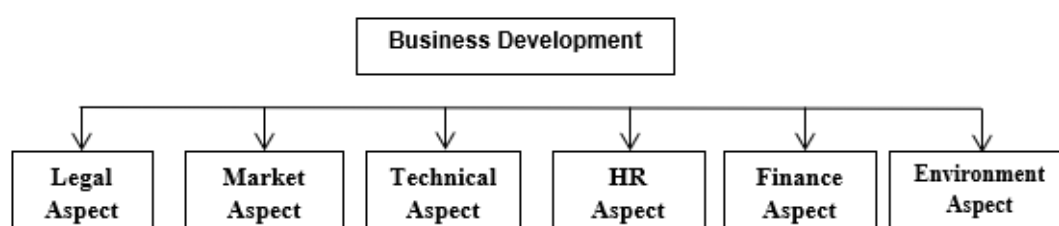


Figure 3.1 Analysis Model

#### 4. Research Methods

##### 4.1 Types of Research, Samples, and Data Collection

This research is an evaluation study whose results are expected to provide input and support decision making. Research conducted a feasibility study on the business development of the Plywood Factory in Lumajang. Sampling method used Saturation Sampling. The research was conducted by interviewing 1 owner of PT. X and 1 Plywood expert. Data collection uses primary and secondary data with details:

**Table 4.1 Data Collection Methods for Each Aspect**

No	Aspects Reviewed	Data Type	Data Sources	Data Collection Techniques
1	Legal Aspects	Ordinal	Primary, Secondary	Interviews, Literature Studies
	Location Permits and Business Permits			
2	Market and Marketing Aspects	Interval	Primary, Secondary	Interviews, observations, and literature studies
	Market: Market Growth, Market Potential, and Market Size			
	Marketing: STP ( <i>Segmenting, Targeting, and Positioning</i> ) and 4P	Interval		
3	Engineering and Operational Aspects	Nominal	Primary, Secondary	Observation, documentation Interview, observation Interview, observation Interview, observation
	1. Business Locations			
	2. Production Area			
	3. Machinery, Equipment and Technology			
	4. Factory and Building Layout	Nominal		
4	Management and HR Aspects	Nominal	Primary, Secondary	Interview, Observation Observation Observation
	Job Analysis			
	Recruitment			
	Salary	Ratio		
5	Financial Aspects	Ratio	Primary, Secondary	Literature study, observation Literature study, observation
	1. Investment Feasibility			
	2. Scenario Analysis	Ratio		
6	Environmental Aspects	Nominal	Primary, Secondary	Literature Studies, Observations

Source: Primary Data Processed (2021)

#### 5. Analysis and Discussion

##### 5.1 Legal Aspects

Permits owned by PT. X are basic permissions. Therefore, a business license is needed which is stipulated by the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number 3 of 2021.

**Table 5.1 Legality Required of PT. X**

No	Legality Required	Status	Information
1	Letter of Domicile	Active	-
2	Registered Certificate (SKT)	Active	-
3	Trade Business License (SIUP)	Active	SIUP PT. X on until 2022-06-16

4	Inauguration Letter of Taxable Entrepreneurs (SPPKP)	Active	-
5	Business Certificate	Active	-
6	Company Registration Mark (TDP)	Active	-
7	Deed of Incorporation	Active	-
8	Nuisance Permits	Active	-
9	Business License	Unfinished	NIB has been obtained in the OSS but still needs to complete the submission of technical proposals and the completion of the IMB. Here are the technical proposals that need to be submitted: <ol style="list-style-type: none"> <li>1. Ownership of raw material supply guarantees in the form of raw material supply cooperation documents or statements of ability to fulfill raw materials from suppliers;</li> <li>2. Ownership of the main machine for the production of forest product processing with a maximum total installed capacity of production machines of 130% (one hundred and thirty percent) of the permitted production capacity, in the form of ownership documents or a statement of ability to fulfill the procurement plan for the main production machine;</li> <li>3. Ownership / control of factory building infrastructure, raw material shelters and processed wood warehouses, in the form of ownership documents or control over factory buildings, processed wood warehouses and raw material storage places/land; and</li> <li>4. Ownership of certified professional technical workers in the field of forest product processing and forest product circulation, in the form of certified professional labor documents or a statement of commitment to fulfill certified professional technical personnel.</li> </ol> <p>The completion of the IMB is still awaiting the completion of ANDALALIN which is still being processed.</p>
10	Timber Legality Verification Letter	Unfinished	Waiting for a new business license to come out can be processed. SVLK can be processed from several Independent Verifications that have been accredited by the National Accreditation Committee (KAN). The requirement needed to obtain a Timber Legality Verification Letter is to have an Industrial Business License.

## 5.2 Market and Marketing Aspects

The following is an analysis of the market aspects of PT. Plywood Factory. X in Lumajang:

### 1. Market Growth

Based on the Market Research Report (2021) plywood growth from 2020-2027 is predicted to be 6.1% which is a good sign for the company to carry out further development of the previous production.

### 2. Market Potential

The market potential owned by PT. X has two segments, namely for export and local. Although the demand needed by buyers is high, bargaining power suppliers are categorized as low because buyers are distributors who sell goods to other factories (furniture) so that the selling price is still suppressed. Bargaining power supplier is low and many buyers are interested, then PT. X needs to find more prospective buyers and choose customers who have the best prices with a high level of tolerance.

3. Market Size

Based on the Market Research Report (2021), the market size in 2027 is predicted to be 108.1 billion USD. It shows that the supply-demand of plywood continues to grow so that it is a good industry to enter.

The following is the marketing strategy of PT. Plywood Factory. X in Lumajang:

1. Segmenting-Targeting-Positioning

a. Segmenting

**Table 5.2 Segmenting PT. X**

	Make by Order	Mass Production
Local	A	B
Export	C	D

b. Targeting

Pt. X is in blocks A and C, namely Local and Export sales according to orders from customers.

c. Positioning

Plywood factory PT. X positions itself as a plywood manufacturer that produces export-quality plywood according to customer wishes.

2. 4P (Product, Price, Place, Promotion)

a. Product

Pt. X focuses on the production of plywood with sengon wood base material. The quality of the products produced there are two segments, the first is export with plywood and local furniture-grade. Furniture grade itself is divided into three classes, namely UTY BTR, EXP, and Local.

b. Price

The price of plywood is determined by the consumer so that there are no further cuts with the following details:

**Table 5.3 Plywood Prices PT. X**

Export		Local	
Grade	Price per m3 (Rp)	Grade	Price per m3(Rp)
UTY BTR	7.000.000	All Grade (Sanding)	3.850.000
Exp	6.400.000		
LOCAL	5.500.000		

c. Place

So far the distributors that have been owned by PT. X is in Surabaya. The sales plan starts with work to local distributors until the product is deemed feasible and then export work is carried out to relatively easy countries such as Malaysia then continued to higher grades such as America and Japan.

d. Promotions

Branding needs to be improved to potential new customers by continuing to produce plywood with good quality and delivery accuracy.

**5.3 Technical and Technological Aspects**

On the business development plan of PT. X can be realized well, then it needs:

1. Business Development Location Selection

Business development has been obtained previously, so there are main variables in the selection of business locations, namely: (a) Availability of raw materials; (b) The location of the intended market; (c) Availability of energy sources, water, and means of communication; (d) Availability of transportation facilities.

2. Determination of Production Area

The machine has been purchased before planning, then the production area automatically follows the number of machines purchased. Therefore, the production area of PT. X ranges from 600 to 1400 m3.

3. Selection of Machine Equipment and Technology

The machine purchased is a reconditioning machine that is selected on the basis of getting a faster return on capital. The necessary machine machines are: (a) Glue Spreader; (b) Cold Press; (c) Calibration Sanding; (d) Hot Press; (e) Double Sizer; (f) Sander.

4. Determination of Business Place Layout

PT.X plywood production is regulated according to the production flow as follows:

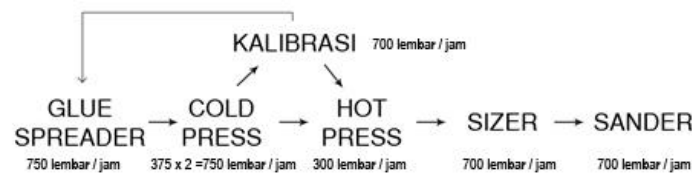


Figure 5.1 Plywood Making Flow

Based on the production flow, a layout was created from the PT. X as follows:

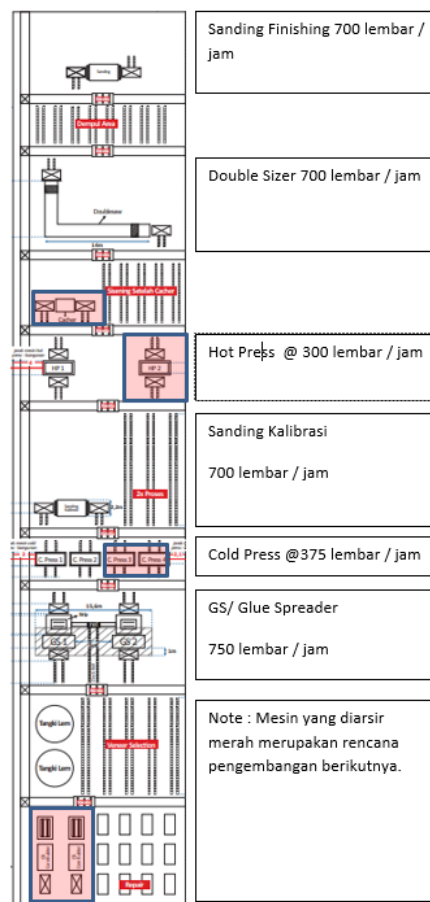


Figure 5.2 The layout of PT.X. Development Business Place

## 5.4 Human Resource Management Aspects

### 5.4.1 Organizational Structure

The results of the comparative analysis of organizational structures show that development requires a slight addition to the organizational structure of the PT. X on Production.

### 5.4.2 Job Descriptions and Specifications

The description of the analysis of work based on the parts added to the organizational structure is as follows:

**Table 5. 4 Job Descriptions and Specifications**

No.	Position	Job Descriptions	Job Specifications
1	Kasie Production (Green Veneer)	<ol style="list-style-type: none"> <li>1. Supervise the production implementation process starting from the input of raw materials (logs) in the production process area until it becomes finished goods (Green Veneer)</li> <li>2. Supervise the use of finished goods, the use of packing materials, and other helpers by minimizing waste</li> <li>3. Maintain and supervise the quality of raw materials (logs) in the process and the quality of finished goods in accordance with the standards that have been set</li> <li>4. Maintain and supervise the smoothness and balance of the process which includes:                             <ul style="list-style-type: none"> <li>- Effective use of human resources by suppressing absenteeism, increasing discipline and discipline</li> <li>- Consistent in applying work methods and work safety</li> <li>- Streamline the operation of existing machines</li> <li>- Maintaining the cleanliness of machine tools and the work environment</li> </ul> </li> <li>5. Supervise the production of green veneer production reports, which include attendance reports, raw material usage, production results and stoppage hours of each machine.</li> </ol>	<ol style="list-style-type: none"> <li>1. Have good leadership skills</li> <li>2. Have the ability to conduct production analysis</li> <li>3. Have experience in the field of green veneer production</li> </ol>
2	Kasie Production (Dry Veneer)	<ol style="list-style-type: none"> <li>1. Supervise the production implementation process starting from the input of raw materials (Green Veneer) in the production process area until it becomes finished goods (Dry Veneer) and the stuffing process</li> <li>2. Supervise the use of finished goods, the use of packing materials, and other helpers by minimizing waste</li> <li>3. Maintain and supervise the quality of raw materials in the process and the quality of finished goods in accordance with the standards that have been set</li> <li>4. Maintain and supervise the smoothness and balance of the process which includes:                             <ul style="list-style-type: none"> <li>- Effective use of human resources by suppressing absenteeism, increasing discipline and discipline</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. Have good leadership skills</li> <li>2. Have the ability to conduct production analysis</li> <li>3. Have experience in the field of green veneer production</li> </ol>


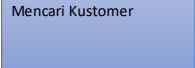
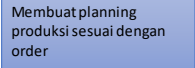
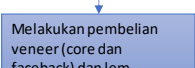
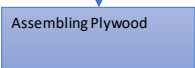
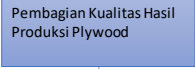
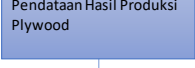
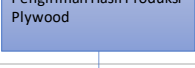

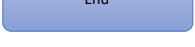
		<ul style="list-style-type: none"> <li>- Consistent in applying work methods and work safety</li> <li>- Streamline the operation of existing machines</li> <li>- Maintaining the cleanliness of machine tools and the work environment</li> </ul> <p>5. Supervise the production of Dry Veneer production reports, which include attendance reports, raw material usage, production results and stoppage hours of each machine.</p>	
3	Kasie Production (Assembly)	<ol style="list-style-type: none"> <li>1. Supervise the production implementation process starting from the input of raw materials (Dry Veneer) in the production process area until it becomes finished goods (Plywood) and the stuffing process</li> <li>2. Supervise the use of finished goods, the use of packing materials, and other helpers by minimizing waste</li> <li>3. Maintain and supervise the quality of raw materials in the process and the quality of finished goods in accordance with the standards that have been set</li> <li>4. Maintain and supervise the smoothness and balance of the process which includes: <ul style="list-style-type: none"> <li>- Effective use of human resources by suppressing absenteeism, increasing discipline and discipline</li> <li>- Consistent in applying work methods and work safety</li> <li>- Streamline the operation of existing machines</li> <li>- Maintaining the cleanliness of machine tools and the work environment</li> </ul> </li> <li>5. Supervise the production of Plywood production reports, which include attendance reports, raw material usage, production results and stoppage hours of each machine.</li> </ol>	<ol style="list-style-type: none"> <li>1. Have good leadership skills</li> <li>2. Have the ability to conduct production analysis</li> <li>3. Have experience in the field of green veneer production</li> </ol>



### 5.4.3 SOP Assembly Line

Pt. X designed a special SOP for assembly line work, namely the work from the development carried out after this, as follows:

**Table 5. 5 SOP Assembly Line**

SOP ASSEMBLY LINE PT.X		
PROSES	TANGGUNG JAWAB	KETERANGAN
 	Marketing	Pihak marketing mencari kustomer yang hendak membeli <i>plywood</i> dan menyampaikan
	PPIC Kepala Produksi	PPIC dan Kepala Produksi membuat planning produksi mulai dari target pengerjaan hingga kebutuhan bahan dasar untuk pembuatan <i>plywood</i>
	Purchasing	Pihak Purchasing membeli bahan dasar untuk produksi sesuai dengan plan yang ditentukan oleh PPIC dan Kepala Produksi
	Kasie Produksi (Assembly)	Produksi <i>plywood</i> bagian assembling oleh para pekerja diawasi oleh kasie produksi
	Quality Control	Tim Quality Control memastikan grading dari setiap lembaran <i>plywood</i>
	Tally Produksi	Tim Tally Produksi mencatat hasil produksi serta jumlah akhir dari produksi
	Umum	Bagian Umum memastikan armada pengiriman serta loading dari produk yang telah dihasilkan
 	Finance	Bagian Finance memastikan pembayaran dari kustomer

### 5.4.4 Compensation and Benefits

There are two types of compensation that companies provide for employees, namely fixed compensation and variable compensation. Fixed compensation is in the form of a fixed salary that each employee receives every month. Meanwhile, variable compensation is in the form of rewards and salaries from non-permanent employees. Employees will also receive holiday allowances on every Eid al-Fitr.

## 5.5 Financial Aspects

### 5.5.1 Initial Investment

The company's investment and costs for plywood production are in the form of building investment, machine investment, cash, and licensing costs. This was issued for the development of the distribution business of PT.X.

### 5.5.2 Financial Feasibility Analysis

Financial feasibility analysis of company development planning using Payback Period (PP), Net Present Value (NPV), Profitability Index (PI), and IRR. The four methods are carried out in three scenarios.

1. Scenario 1: Taken if the sales of the products produced by the development are sold to the local market with a full composition of Sengon wood. Returns a negative value.
2. Scenario 2: Calculated if the sale of products sold in the local market for 2 years and then the sale of 50% local composition and 50% export for 3 years is carried out. Resulting in an increase of 43%.
3. Scenario 3: A if the sales of the products produced by the development are sold on the export market 100% from the beginning of the sale. Resulting in an increase of 291%.

### 5.6 Environmental Aspects

Based on the analysis, the first activity of PT. X does not use Reclamation of Coastal Areas and Small Islands. The two companies did not carry out hill cutting and land acquisition. The company does not draw clean water from lakes, rivers, springs, or other surface water sources. The underground water supply is owned by PT. X of 30 liters/second as production material water and hygiene water. Therefore, the company can be declared mandatory UKL-UPL. Currently PT.X has not yet completed UKL-UPL fulfillment because it is still at the stage of Submitting Technical Proposals to OSS.

### 5.7 Managerial Implications

#### 1. Legal Aspects

Companies are required to have a business license. The company is taking care of a business license so that the development process can run smoothly.

#### 2. Market and Marketing Aspects

Plywood Factory PT. X in Lumajang has a real market share. Marketing strategies are less necessary because the intended market is B2B.

#### 3. Technical and Technological Aspects

The owner already has a clear division of spatial layout and has determined the distribution system to be used. The development location has also been adjusted to the supply of raw materials and sales distribution.

#### 4. Human Resource Management Aspects

Structure organization Plywood Factory PT. X in Lumajang some need to be added to fit the functional plant after development.

#### 5. Financial Aspects

Through this study, the owner realized how important the financial aspects are for the sustainability of the company's operations in the future.

#### 6. Environmental Aspects

Through this study, the owner realizes the importance of the environmental aspect and immediately works on the necessary obligations.

## **6. Conclusions and Suggestions**

### **6.1 Conclusion**

1. The legal aspect shows that the Plywood Factory PT. X still does not meet the licensing requirements and only NIB, so the company is not eligible to run until the permit is completed.
2. Aspects of market growth and marketing is quite good at 6.1%. STP and 4P have been analyzed but are considered unnecessary because of direct B2B sales.
3. The location of the company is in accordance with the functions and operational needs of the company. Technologically, the company has the necessary machines of the production process. PT. X is considered worthy of being established because it has good and qualified technical and technology.
4. The company has a fairly good organizational structure. However, after making comparisons, some changes were made to improve the structure.
5. The financial aspect of the research is carried out with the first scenario, which is the sale of products from the development which are sold to the local market with a full composition of Sengon wood. The second scenario is taken into account if the sale of products to the local market for 2 years and then the sales of 50% local composition and 50% export for 3 years are carried out. The latter scenario is if sales of products resulting from development are sold to the export market 100% from the beginning of sales. Scenario 1 was judged less feasible because it resulted in a negative value.

### **6.2 Suggestion**

#### **6.2.1 Advice for Companies**

1. These results can be used as a tool in determining decision-making for the selection of the right market share for the company.
2. The company must immediately complete the business license in order to immediately carry out operations.
3. Companies are encouraged to review financial aspects and make improvements to financial calculations.

#### **6.2.2 Suggestions for Further Research**

1. It is necessary to have further research on the feasibility study of business development through other aspects outside the studies discussed to obtain more valid results and conclusions.
2. There needs to be more detailed research on the scenarios analyzed and their weaknesses or shortcomings.

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