

## Feasibility Study of Modified Genteng (Tile Roof) Press Machine

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**Abstract.** Kebumen's tile industry with Sokka tile product name has long been known in Central Java Indonesia. Unfortunately tile Sokka still has some weaknesses such as the traditional production techniques, innovation is not optimal, mixed household finances by the financial industry, the traditional management, no firm association container tile factory and there is no standardization of tile prices and no government support. This study aims to conduct feasibility study of modification efforts tile press machine by analyzing the five aspects including financial aspects, production and operational aspects, market aspects, social and economic aspects. Results of the study showed that, using cost benefit ratio analysis, it was found that there was a significant increase in financial benefits; from production and operational point of views there were a significant product quality improvement (i.e., production cost savings with the modification of press machines, among other things in terms of production time and increasing production capacity); innovation and product variety seemed to be of importance to fill a wide open market opportunities; and manufacturing modified tile roof machine provided a positive impact on rural incomes and employment.

**Keywords:** Modified tile press machine, financial performance and market opportunities.

### 1. Introduction

Kebumen's tile industry with Sokka tile product name has long been known in Central Java. Its name is equated with other famous tile industry, such as tile Jatiwangi origin Majalengka, West Java. Unfortunately tile Sokka still has several weaknesses, among others, the traditional production techniques, from raw material processing techniques, printing techniques, drying techniques to combustion technique. Although this industry also has advantages that are able to support some of the residents and make market opportunities that can increase Kebumen's income.

Because the tile industry in the region Kebumen Sokka is a home industry, then from below the existing level of price competition among home industry with each other. Then, for marketing to Yogyakarta and surrounding areas there is no region of origin tile industry that are cheaper, although its quality is still below the tile origin Kebumen Sokka. Similarly, for marketing to the East Java region in addition to competition with the local tile industry is also expensive transportation costs. Especially for marketing to the region of West Java to Jakarta, where in the region already is dominated by Jatiwangi tile industry. But the name of tile Sokka still be calculated in the home industry. Therefore we are interested to conduct research, to try to get Sokka tile industry in the region still continuing and can even compete in the national industry.

Roof tile production process Kebumen Sokka initially faced some obstacles in the use of manual press machines such as the traditional production techniques, innovation is not optimal, mixed household finances by the financial industry, the traditional management, no firm association container tile factory and there is no standardization of tile prices and no government support. In an effort to minimize the constraints above and to be able to realize new business based on knowledge and technology. Therefore a comprehensive study needs to be done to conduct a feasibility study on the use of modifications in order to streamline the production of press machines in tile industry.

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Modification of tile press machine with a mechanical drive system mounted transverse screw with a pulley drive side, which allows the pressing of tiles made by one person. This study aims to conduct feasibility study of modification efforts tile press machine by analyzing the five aspects including financial aspects, production and operational aspects, market aspects, social and economic aspects.( Hoagland, 2000)

Investment in a business or project, either for a new business or expansion of existing businesses, usually tailored to company objectives and forms of business entities. (William, 1995). For company objectives can be done that before investing, in general, they have done a study to assess whether the investment will be invested to provide benefits or not. This study is known as the feasibility study, business is an activity to learn in depth about a company or business running, in order to determine the possible or not the business is run.. (Kasmir, 2007; Supriadi, 2008). A Business Feasibility Study can be defined as a controlled process for identifying problems and opportunities, determining objectives, describing situations, defining successful outcomes and assessing the range of costs and benefits associated with several alternatives for solving a problem. (Thompson,2003, 2005). The Business Feasibility Study is used to support the decision-making process based on a cost benefit analysis of the actual business or project viability.

Kebumen tile production machine in most regions using traditional screw press machine. Where the prime mover in the form of large pulley that drives the screw to press the printer mats or tiles, which are driven by human power. Pressing machine pulley drive system made of solid cast iron with a diameter of 100 cm, so that feels heavy to operate it is usually driven by 2 people manually. This research was conducted to facilitate operational way tile pressing machine. The press machine is expected to be modified in operation will be much lighter and pulley only played by one person. Compression strength resulting from the pressing machine is expected the same as before, because it still uses the screw drive system but with a modified system of selection of mechanical and lighter materials.

## **2. Research Method**

The study was conducted by a modification of tile industry offer press machine in order to strengthen the technology by first conducting a feasibility study on the modification of industrial tile press machine in the following ways and methods of benefit-cost ratios, and examine some important aspects of the feasibility study such as market, financial, and socio-economic aspect.

Methods of data collection using questionnaire survey to the tile industry employers about work systems old tile pressing machine and to know aspects of market, financial, and socioeconomic aspects. In addition, the review will be carried out directly in the field of production processes from early stages to the final stage. As the number of tile industry employers is too many to be included in this research, a sample was chosen from the population. Sampling technique deployed is purposive sampling. The criteria which was used to choose the sample was having home industry of tile more than three years. The samples were selected from five districts of the central tile industry in the District of Kebumen are Sruweng, Pejagoan, Adimulyo, Klirong and Kutowinangun. This research was conducted in only two districts namely Pejagoan and Klirong with the consideration that has more tile industry from other industries.

Data were analyzed using comparative techniques, which is to compare the cost of production before and after modification of press machine, in order to obtain data for use in the period after analysis of the data recovery method and the relationship benefit-cost ratios as a tool of analysis in one of the aspects of finance, in addition to investigate other aspects, such as aspects of financial, market and the socio-economic aspects.

## **3. Results and Analysis**

Cost-benefit analysis was performed by comparing the costs of production before pressing machines handled after the press of changes, as shown in table 1. This calculation is done by assuming the capacity of tile furnace as much as 17000 pieces.

TABLE 1 Comparison of Production Cost

Production Cost	Before	After
Raw Material costs @ Rp 150 x 17.000	Rp2,550,000	Rp2,550,000
Fixed Labor costs @ Rp 15.000	Rp2,310,000	Rp1,530,000
Overhead costs @ Rp 25 x 17.000	Rp425,000	Rp425,000
Tile drying costs @ Rp 15 x 17.000	Rp255,000	Rp255,000
The cost of the combustion process	Rp750,000	Rp750,000
The cost of firewood	Rp3,500,000	Rp3,500,000
Total Production Costs	Rp9,790,000	Rp9,010,000
Sales @ Rp 750 x 16.000	Rp12,000,000	Rp12,000,000
Net Profit	Rp2,210,000	Rp2,990,000

Source : Primary Data

As shown in table 1, there is increased profit of Rp 780,000, - after modification press machine. Increase in profit is because there are cost savings of workers. After the modified press machine will provide the following benefits :

- Reduce the number of workers from 7 people to 6 people
- Increase the amount of production from 700 s / d 800 into 1000 tiles per-day
- Target achievement tile production requires a shorter time than 22 days was reduced to 17 days.
- Tile pressing labor costs will be reduced with details @ Rp 15.000 x 6 people x 17 days = Rp 1.530.000,- from before modification press machine.
- With the reduction in the cost of pressing the tile is expected to reduce the production cost of about 8 to 10%, which would add to profits.

Thus, based on cost and benefit analysis of the press machine proper modifications are made to improve the performance of tile production process. Even this result is strengthened by examining and reviewing aspects of the feasibility study of the financial aspects of the business, markets, and the socio-economy, presented in the following way:

### 3.1. Results Analysis of Financial Aspects

As shown in Table 2, only 15 home industries of tile were successfully interviewed.

TABLE 2 Initial capital tile industry

Capital	Total Industry
< Rp 10.000.000,-	3
Rp 10.000.000 - Rp 15.000.000	8
> Rp 15.000.000	4

Source : Primary Data

From the table above is known that most of the tile industry start their business with capital of Rp 10,000,000 to Rp 15,000,000, -. After 2 or 3 years they have experienced a significant increase in assets as presented in the following table 3.

TABLE 3 Market Value Assets

Market Value of Business Assets	Total Industry
Rp 1.000.000 s/d < Rp 10.000.000	7
Rp 10.000.000 s/d < Rp 50.000.000	7
Rp 50.000.000 s/d < Rp 500.000.000	1

Source : Primary Data

Tile industry in the two districts of Kebumen have a good turnover and have a promising business opportunity is as shown in the table below.

TABLE 4 Sales Turnover

<b>Total Sales Turnover</b>	<b>2008</b>	<b>2009</b>
< Rp 120.000.000	2	1
Rp 120.000.000 s/d < Rp 150.000.000	2	3
Rp 150.000.000 s/d < Rp 180.000.000	1	0
Rp 180.000.000 s/d < Rp 210.000.000	4	5
Rp 210.000.000 s/d < Rp 240.000.000	1	2
Rp 240.000.000 s/d < Rp 270.000.000	4	1
Rp 270.000.000 s/d < Rp 300.000.000	1	3

Source : Primary Data

Table 4 seems all the tile industry has increased sales in the last two years (2008 and 2009), although there are some who do not. Revenues from sales in a year that can be achieved by the tile industry is between Rp 180 million to 210 million rupees,-. On the whole financial aspect shows a promising opportunity to continue the tile industry.

### 3.2. Results Analysis of Market Aspects

Tile name Sokka still be calculated in the home industry, especially by looking at big market opportunities as presented in the following table.

TABLE 5 Market Opportunities

<b>Market Opportunities</b>	<b>Percentage</b>
Sufficient capital available	80%
Extensive marketing	87%
Labor availability	27%
Innovation in product, marketing and process	53%
Raw material availability	100%
Good business management	40%

Source : Primary Data

Tile industry in the two districts (Pejagoan and Klirong ) have a large enough market opportunity, especially seen from the benefits of the availability of raw materials and capital and market opportunity that is wide enough as shown in the table above. It thus can be enhanced with a variety of marketing efforts that have been done as shown in the following table.

TABLE 6 Marketing Efforts

<b>Efforts to increase product sales</b>	<b>Percentage</b>
Exhibition	40%
Lower selling prices	40%
Sales discount	53%
Sales on credit	93%

Source : Primary Data

Table 6 shows the various marketing efforts that were made by the fifteen tiles respondents in this study, the majority of marketing efforts through the sale of credit. This is possible because most of the population in rural districts like buying on credit.

### 3.3. Results Analysis of Socio-Economic Aspects

The results of the economic and social aspects of this show the positive impact such as providing opportunities to increase income communities and provide income in the form of revenue for local governments and existing natural resource management (as raw material for tiles) is better. These results are illustrated in the following table.

TABLE 7 Positive Impact Tile Industry

Positive impact on the surrounding community	Percentage
Opening employment opportunities	100%
Provide guidance to workforce	27%
Increasing the income of the community	93%
Promoting other similar business	7%
Utilization of local resources	73%

Source : Primary Data

From 7 in the above table it appears that the greatest impact with the roof tile industry in both sub Pejagoan and Klirong is this industry to open jobs for local residents in addition to increased income communities in both these districts. Fitting these results open the opportunity for the tile industry for more active and valued by the Local Government Kebumen be able to compete on a national level.

With the press machine are modified in this study are expected in the operation will be lighter and pulleys sufficiently rotated by one person. Compressive force resulting from the pressing machine in this study also expected the same as the old one, because it uses a screw drive system but with a modified mechanical systems and the selection of lighter materials. The question then arises why not use an automated pressing machine with hydraulic drive (pneumatic or electric)?. Since the orientation of this research is to small industries or home industries that use the operational costs are small, simple but effective equipment. Meanwhile the price of an automated pressing machine with hydraulic drive (electric) was expensive and require an electric drive with a large power and specialized professional personnel too.

#### 4. Conclusion

Tile industry in the two districts namely Pejagoan and Klirong have an excellent business opportunity with the demonstrated feasibility study analysis of the financial aspects of roof tile industry, market, economic and social aspects.

The results of the feasibility study showed an increase in the financial aspect profit of Rp 780 000 in hopes of reducing production costs by about 10%. From there the operational aspects of production and production cost savings with the modification of press machines, among other things in terms of production time and increasing production capacity. Aspects of the market shows a great opportunity when the innovation of diverse types of production can be increased and the resulting economic and social aspects indicate a very positive impact with increased incomes and employment opportunities expanded.

#### 5. References

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