The Profile of Local Tofu Industry in Trenggalek Regency, East Java Province, Indonesia

Nina Lisanty[1*], Eko Yuliarsha Sidhi[1], Agustia Dwi Pamujiati[1]
[1]Agribusiness Department, Kadiri University, Kediri City, Indonesia
Corresponding author: lisantynina@unik-kediri.ac.id

ABSTRAK

Penelitian ini bertujuan untuk mengetahui besarnya biaya, penerimaan, dan keuntungan usaha industri tahu di Desa Nglongsor, Kecamatan Karangan, Kabupaten Trenggalek dalam satu kali produksi. Penelitian ini di tentukan secara purposive atau sengaja. Metode penentuan sampel yang di gunakan adalah sampling jenuh atau sensus de Desa Nglongsor Kecamatan Karangan Kabupaten Trenggalek. Adapun alasan dipilihnya daerah tersebut karena merupakan wilayah produsen tahu terkenal dan khas di Trenggalek. Hasil penelitian menunjukkan bahwa nilai rata-rata dari bahan baku kedelai sebanyak 42 kilogram pada harga kedelai saat penelitian sebesar Rp8.500 per kilogram, menghasilkan tahu sebanyak 400 bungkus, dengan harga jual tahu per bungkus isi 2 (atau 4 buah) sebesar Rp2.000 per bungkus. Dalam sekali produksi, penerimaan yang diperoleh sebesar Rp800.000. Dengan rata-rata total biaya produksi sebesar Rp518.786, keuntungan yang didapat sebesar Rp218.822. Nilai R/C Ratio sebesar 1,38 yang artinya usaha home industri tahu dinyatakan layak untuk dikembangkan. Hasil uji statistik untuk variabel keuntungan dan kelayakan usaha menyatakan bahwa hipotesis penelitian dapat diterima.

Keywords: agroindustry, profil usaha, tahu, trenggalek

ABSTRACT

A study was aimed to determine the costs, revenues, and profits of the tofu industry in Nglongsor Village, Karangan District, Trenggalek Regency in one production period. The location was determined intentionally. The sampling method used was saturated sampling or census. The reason for choosing the area was because it is a well-known and distinctive tofu-producing area in Trenggalek. The results showed that the average value of soybean raw materials was 42 kilograms at the price of soybeans of IDR 8,500 per kilogram, producing 400 packs of tofu. The selling price of tofu per pack of two (or four) pieces was IDR 2,000. In one production period, the revenue earned was IDR800,000. With an average total production cost of IDR518,786, the profit earned was IDR 218.822. The value of the R/C Ratio was 1.38, which means that the tofu home industry business was declared feasible to be developed. The statistical tests for the profit and business feasibility variables stated that the research hypothesis was accepted.

Keywords: agroindustry, business profile, tofu, Trenggalek

INTRODUCTION

The industrial sector has a vital role in the Indonesian economy. This sector contributes to the Gross Domestic Product (GDP) and foreign exchange earnings. It is believed to be a sector that can lead other sectors to a more advanced economy. Industrial products always have terms of trade (selling value) and create higher added value than other products. The act of linking the industrial sector with the agricultural sector will provide an opportunity to increase the role of both (Yasa & Monika, 2021).

The agricultural sector remains a driver of Indonesian economic growth, not only in terms of foreign exchange contributions but also in providing employment opportunities. Furthermore, the role of this sector can still be improved through the development of an industrial-oriented sector, known as agroindustry.

The food and beverage industry is the leading sub-sector of the Indonesian agroindustry (Agusalim, 2017). One of the running food agroindustries for a long time by the people throughout Indonesia is the production of tofu. Originating from China, tofu has been widespread and consumed daily by Indonesian as a protein source. Although more than eighty percent of its primary raw material, soybean, is imported, its consumption in Indonesia equals 2.77 kg of soybean per capita per year (Pusat Data dan Sistem Informasi Pertanian Sekretariat Jenderal Kementerian, 2019).

Micro and small scales businesses dominate tofu industries in Indonesia. In Trenggalek Regency of East Java Province, Nglongsor Village in Karangan District is a local tofu producing area. The majority of its population involves a tofu-production industry whose manufacturing process is still mainly traditional. The tofu-production industry has become the main livelihood, providing income for the villagers. Despite having various problems in its production process, the villagers continue to run their business for decades, even passing on to their successors. The first problem includes difficulty getting a permit certificate of the home industry (known as SPP-IRT) from the related department due to the lack of socialization (Nugroho & Rusydiana, 2018), which impacts the scope of tofu marketing. Another problem is the availability of workers because the industry is considered a tough job. Last but not least is the waste problem of this industry, remaining a worrying environmental issue.

A study regarding the profile of tofu production industries in Nglongsor Village Trenggalek Regency raises several issues, including the financial and feasibility of the businesses for the villagers. The development strategies can be formulated by analyzing local tofu industries' costs, revenues, and profits. The results of this study are expected to provide information and input for entrepreneurs and investors who want to establish and develop the tofu industry businesses in the area and material for government considerations in formulating a policy related to this problem in the future.

RESEARCH METHOD

The research area was determined purposively considering that Nglongsor Village has a highly strategic tofu market potential in Karangan District because it is close to traditional markets in Trenggalek Regency. The research was conducted from October to December 2021. A survey was carried out to withdraw respondents from eight tofu industry owners, spread over three hamlets in Nglongsor Village. Sampling was done purposively with a total sample of 5 respondents in one hamlet, namely Corahmulyo Hamlet. Data collection employed the literature study, observation, interviews, and documentation methods. The collected data were processed (editing, coding, tabulating) and then analyzed to determine home-based tofu agroindustry's production, revenue, and income.

Furthermore, the business feasibility was determined by assessing the ratio of revenue and cost. The business is considered break-even when the R/C ratio equals one. The R/C ratio of less than one means that the business suffers a loss; otherwise, it is profitable. The results were tested statistically using a t-test with the decision-making criteria of significance value more than 0.05; the research hypothesis is rejected or otherwise.

RESULTS AND DISCUSSION

Characteristics of Tofu Production Industry

The tofu-producing industry in Nglongsor Village was mainly the home industry of micro and small-scale business. The majority were the second and third generations, estimated that the industry has existed since the 1940s. The current owners ran the businesses inherited from their fathers or grandfathers. Many tofu industry players in Corah Mulya Hamlet have earned this area the nickname "Corah Mulya Tofu Industry Center."

Respondents were tofu production industries that were active in the production and were located in Nglongsor Village. The identity and characteristics of the business owners include gender, age, education, length of business, and production capacity. Firstly, gender is one of the essential factors in determining a job, including in the tofu production industry. Men will generally be placed in jobs that require more strength, while women will be placed in jobs that require less power (Bakhtiar *et al.*, 2018). More respondents were male than female, with a percentage of 80 and 20 percent subsequently. Men in the tofu production industry are generally in charge of producing

white tofu, while women are in charge of frying tofu, assisting in the production process (if needed), and selling tofu in the market. Secondly, age is an indicator that can affect a person's work. When a person's age has entered old age, work performance will indirectly decrease (Syafitri *et al*., 2021). Eighty percent of respondents were 40 to 50 years old, and the rest were over 50 years old. It means that most of them are classified as still productive.

Thirdly, each respondent was a graduate of elementary school, middle school, and college, based on their education level. Meanwhile, one respondent did not even finish school. Although the level of education does not directly affect the size of the tofu production capacity, business decision-making in this industry, according to research, is influenced by the experience, patience, and hard work of business actors (Dewi et al., 2016). Concerning innovation, it is known that education is an essential factor in determining the rate of adoption of innovations and improving the quality of resources (Supriadi *et al.*, 2018). Fourthly, respondents have varied business experience. The longer one runs the business, the greater the experience one will gain. The level of experience and expertise of business actors affects the quality of production and response to a problem that occurs in the business.

The number of tofu produced during one production period is also known as the production capacity of a tofu production industry. Although a tofu production industry generally produces once daily, not all respondents make it every day. Some only produced once a week. Sixty percent of respondents produced 20-50 kilograms of tofu for one production. Meanwhile, the rest have a production capacity of between 10-20 kilograms per production period. Table 1 displays the characteristics of the respondents described above in tabulated form.

Table 1. Characteristics of Tofu Production Industry in Trenggalek Regency.

Characteristics	**Quantity (person)**	**Percentage (%)**
Gender:		
Male	4	80.00
Female	1	20.00
Age (years old):		
40	2	40.00
41 – 50	2	40.00
50	1	20.00
Education Level:		
Primary school	1	20.00
Junior High School	1	20.00

Senior High School	1	20.00
College	1	20.00
Ungraduated	1	20.00
Experience in Tofu Industry (year):		
20	1	20.00
21 – 30	2	40.00
31	2	40.00
Production Capacity (kg):		
10-20	2	40.00
20-50	3	60.00

Source: Primary data (2021)

Production Process of Tofu Industry in Trenggalek Regency

The production process of the tofu industry in the Trenggalek Regency consists of several steps. The methods include soaking, washing, grinding, boiling, filtering, clumping, printing, and packing. The ways are more or less similar to other tofu production industries (Widaningrum, 2015). Producers use soybeans that are sold in the local market. Almost all soybeans that are usually used are imported soybeans. Unfortunately, based on interviews with respondents, local soybeans from East Java cannot always rely on it. Firstly, soybean seeds are soaked in water at room temperature for four hours. The soaking process is aimed to make soybeans softer during the cooking process. After soaking, the soybeans are washed with clean water. This washing process must be thorough in producing good quality tofu.

The soybean seed is then ground using a grinding machine into soy porridge. The porridge is directed into a holding tank. Before the soybean porridge is boiled, clean boiling water must be provided. The porridge is mixed with water while being cooked and runny. The boiling process includes gradual stirring, so there is no scorched. The process duration is around twenty-five minutes per ten kg of soybean seed. After boiling, the soy porridge that has been cooked and runny is then filtered using a filter cloth. The filter cloth is shaken, for the juice in the soybean porridge is thoroughly screened. It is then squeezed back with water doused. This activity is repeated until it does not contain fluid anymore.

Furthermore, the soybean porridge fluid is mixed with vinegar to create tofu. The mixture is let sit for about five minutes to clump. After experiencing the clumping process, the following process is printing. The tofu dough is put into a mold made of wood, lined with cloth. It is then closed and pressed using a press made of wood. Each tofu industry usually puts a signature on its tofu product by adding a unique sign or stemple on the ballast (or press). The printing process takes a few minutes until the

product hardened. The last stage is the packing stage. Tofu is put in a plastic bag or plastic bucket and added with clean water to make the product more durable. The product is ready to be marketed, commonly known as white tofu.

Cost, Profit, and Feasibility Analysis

According to Uwalaka *et al*. (2021), costs are economic sacrifices, measured in units of money, to earn income. The calculation of production costs will later affect a business's revenue, income, and feasibility (Matakena *et al*., 2021). The costs consist of purchasing costs of soybeans, vinegar, firewood, labor, and equipment depreciation. The average total cost of respondents per production period was IDR518,786. Below is a more detailed explanation of each cost.

Soybean is used as the primary raw material in the production of tofu. As previously explained, processed soybeans were imported soybeans for IDR8,500 per kg. Soybean price was sometimes unstable due to scarcity (Afianto *et al.*, 2019; Zainuri *et al.*, 2015). Tofu production of respondents required an average of 42 kg of soybeans, so the average cost was IDR294,000. Vinegar (acetic acid) was an auxiliary material for tofu production. On average, respondents needed 2 ml (2 packs) per production for IDR 15,000 per pack. Thus, the average vinegar cost for the tofu production process was IDR30,000. The fuel for tofu production was firewood. Respondents spent one cart of firewood for one production period. The price per cart of firewood was IDR 50,000. The typical type of wood used was teak. The furnace was made of bricks. The need for firewood depended on the amount of tofu produced.

In terms of the workforce, laborers generally came from within and outside the family (Wibowo *et al.*, 2021; Yuniati *et al*., 2019). Workers outside the family were generally around five people with an average wage of IDR30,000 per half-day in one production period. Activities carried out by the laborers included the washing process to printing. The total average salary of the respondents for one production period was IDR144,000. Equipment used in tofu production would experience depreciation in selling value with an estimated average economic life of 1 year. The pieces of equipment were large buckets, drums, fine cloth, knives, and molds. The average number of equipment in tofu production was 15 units with a depreciation value for one production period of IDR786.

Tofu producers' revenue was calculated from the amount of production (in packs, where one pack contains two large tofu or four small tofu) multiplied by the

selling price of tofu per pack. In one production process, producers could produce 400 packs per pack of IDR2,000. The average producer revenue per production was IDR800,000. The way of marketing influenced the revenue received by producers. Producers market their products through intermediary traders who distribute tofu products to their customers, namely collectors in the market.

Furthermore, the producer's profit can be calculated based on the abovementioned costs and revenues. The average profit earned by producers per one production period was IDR218,822. The revenue and cost ratio (R/C ratio) was 1.38. This value means that the local tofu home industry was feasible to develop because the R/C ratio value was more than 1.

Table 2 displays the calculation of costs, revenues, profit, and the value of the R/C ratio in tabular form. Furthermore, Table 2 also shows the statistical test results of the research hypothesis using the t-test. From the producer's profit test results, it was known that the p-value was 0.00666. This result shows a value that was smaller than alpha (0.01). The interpretation of this analysis is that the research hypothesis can be accepted, which means that the local tofu home industry in Trenggalek Regency is very significantly profitable. Likewise, with the statistical test results of the R/C ratio value, it was known that the p-value of 0.00006 was smaller than alpha. It means that the research hypothesis is also accepted, which in other words, the local tofu home industry in Trenggalek Regency is significantly feasible to be developed.

Table 2. Cost, Profit, and Feasibility Analysis.

Analysis	Quantity	Amount (IDR)
Cost:		
Soybean (kg)	42	357,000
Vinegar (ml)	2	30,000
Firewood (cart)	1	50,000
Laborer (person)	5	144,000
Equipment depreciation	80	786
Total Cost		518,786
Revenue:		
Production (pack)	400	
Price (pack)		2,000
Total Revenue		800,000
Total Income/Profit		218,822
P(T<=t) one-tail (0.00666)		
R/C Ratio 1.38		
P(T<=t) one-tail (0.00006)		

Source: Primary data (2021)

Development Strategy of Tofu Agroindustry in Trenggalek Regency

Based on observation and group discussion, product marketing was the development strategy of local tofu agroindustry in Trenggalek Regency, especially in the research site. The market aspect observed in the study consists of the 4Ps, namely product, price, promotion, and place used by each home industry.

In terms of product, the tofu product's quality was valuable. This quality could be seen from the color of the tofu product, which was clean white without any remaining dirt or residue from other substances that caused the color of the tofu to change from its original. The texture of the tofu was also just right, not soggy and easily crushed, so it gave a delicious and savory taste when cooked. Tofu products had a shelf life of up to three days without changing the texture and flavor. The two standard sizes of local Trenggalek tofu were per market demand. The product was thicker than other tofu products from outside Trenggalek.

Furthermore, customer service was also acceptable, especially for customers who came directly to the factory to make tofu purchases. The producers, in a friendly manner, directly served customers. Small talk and jokes were invited to increase the close relationship between producers and consumers (Astiani *et al.*, 2020). If orders needed to be delivered to consumers' homes, producers immediately had consumer orders. The by-product of the tofu production industry was tofu dregs (solid waste). This solid waste was generally sold to farmers as animal feed. The selling price of tofu dregs was IDR10,000 per sack with a volume of 15 to 20 loads per production period.

In line with the quality, tofu products in Trenggalek Regency were set at a specific price. Producers determined the product selling price with various considerations (Rahmah *et al.*, 2020). The price set was more or less the same as most tofu, so local tofu products could still compete in the market (Syaroh *et al.*, 2021). Producers provided discounts for buyers who bought products in large quantities.

The promotion carried out by local Trenggalek tofu producers was through sales agents who long been their regular customers. In addition, promotions were also carried out by customers, through word of mouth, who thought that local tofu products were delicious and cheap. Sales agents for local Trenggalek tofu products were spread over several important marketing points, such as in traditional markets, grocery stores, and stalls in rural areas, traveling tofu sellers, and agents tasked with delivering goods to customers order them every day. Besides offering tofu products directly to consumers, producers also took advantage of telemarketing (ordering by telephone). Once an

agreement was reached, delivery orders could be the choice of consumers. Main customers often order via Short Message Services (SMS) or social media applications, such as WhatsApp.

Trenggalek's local tofu marketing channels are as follows:

1. Producer to Consumer

Consumers came directly to the tofu factory to buy tofu products in units or considerable quantities in this channel. Usually, consumers were local people whose homes were relatively close to the tofu production site or sales agents who were also tofu product resellers.

2. Producer to Agent to Consumer

Producers distributed their products via a storage system. Agents were generally traders who only sold tofu products in the market. Producers chose agents who were considered trustworthy to be given responsibility and could be entrusted with products in large quantities. Through agents, consumers bought local tofu products.

3. Producer to Retailer to Consumer

Through their sales agents, producers also carried out a marketing system to retailers such as fried food sellers and restaurants that have (or will) become (new) customers. Then the product reaches consumers' hands.

Environmental Issue Regarding Tofu Agroindustry

Direct observations discovered the main problem in the local Trenggalek tofu production agroindustry, namely liquid waste. The disposal of tofu wastewater on-site was generally directly into the nearby river, and some factories drained liquid waste directly into sewers. The action raised the problem of water and air pollution due to the unpleasant smell of waste (Sari *et al.*, 2021). In addition, these industries are located in the middle of residential areas. This issue should focus on developing local tofu agroindustry (Septifani *et al.*, 2021, 2018). The local government must cooperate with various parties, including academics and practitioners, to deal with the negative impact on the environment (Sintawardani *et al.*, 2022). The government may consider one alternative to reduce COD, BOD, and TSS of tofu liquid waste by employing the ozonation method (Wulansarie *et al.*, 2020).

CONCLUSION

The average total cost of the local tofu home industry in Nglongsor Village, Karangan District, Trenggalek Regency was IDR518,786 per single production. The average revenue earned was IDR 800,000, and the average profit earned was IDR218,822 per production period. The calculation result of the R/C ratio was 1.38, which means that the tofu production industry was feasible. Likewise, the statistical test of both the profit and R/C ratio values showed a value smaller than the alpha. Statistically, the industry was significantly profitable and feasible.

It is hoped that producers can continue to improve the quality of their products. Manufacturers are advised to increase product variety, perhaps by enriching the types of tofu produced to attract more consumers. It is better to form a business group to support the development of the tofu industry to increase tofu production in Nglongsor Village. Industry groups can access assistance such as production equipment and additional business capital and hold ongoing training to improve human resources. The relevant parties in the Trenggalek Regency government should be able to direct and foster the tofu industry in Nglongsor Village, Karangan District, Trenggalek Regency to be better and develop.

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