

Developing Economic and Environment on Innovation Practice of Sustainable Product in MSME Temanggung Arabica Coffee

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Abstract: A target of the Sustainable Development Goals (SDGs) is economic growth and responsible production. To achieve the goal, it needs the support of the economic sector, including the Micro, Small, and Medium Enterprises (MSME). One of the MSMEs, which is the leading commodity in Temanggung Regency, is the MSME cluster of Arabica Temanggung Coffee. The limited land and production in the highlands make Arabica coffee agricultural products fluctuate. This study aimed to explore the process of economic and environmental development on the practice of sustainable product innovations in Arabica Temanggung coffee. The research type was analytical descriptive. Data collection techniques were observation, interviews, focus group discussions (FGD), and literature studies. The results showed that most MSMEs have implemented environmentally friendly production practices, such as energy efficiency, water efficiency, chemicals-free, and reusing waste of production. The practice is the result of sustainable innovation by MSMEs, which impacts on increasing profits, due to efficiency and increased sales. The study found evidences, which may be used in developing and testing hypotheses regarding the performance of sustainable product innovation. The article suggested an idea of more comprehensive environmentally friendly production practices sustainably at all production stages to achieve higher effectiveness and efficiency.

Keywords: Economic Development, Environment, Innovation Practice of Sustainable Product

1 Introduction

The targets for the Sustainable Development Goals (SDGs) are economic growth, reaching zero poverty, and responsible production [1]. To achieve the goal, it needs the support of economic sectors, including the Micro, Small, and Medium Enterprises (MSME) sector. The MSME sector has a major contribution to the sustainable growth of a country [2].

In Temanggung regency, data issued by the Office of Cooperatives and Trade in 2021 showed that they are assisted 202 MSMEs in the coffee sector. In table 1, the cluster of UMKM Temanggung Arabica Coffee has experienced the declining trend of selling market in the last two years as the impact of the covid-19 pandemic.

Table 1. Average sales of Temanggung Arabica Coffee (kg)

Year	2019	2020	2021
Arabica Coffee	63.132.000	42.088.000	20.623.000

(Processed primary data)

In terms of land use and production of Arabica coffee, it fluctuated itself, as shown in data reported by BPS (Central Bureau of Statistics). This fact is certainly a problem for MSMEs to increase the main and superior commodities in Temanggung Regency.

Table 2. Total Area of Arabica Coffee commodity in Temanggung Regency (ha)

Year	2016	2017	2018	2019	2020
Arabica Coffee	1382.82	1381.82	1115.58	1844.59	1366.97

(BPS of Temanggung Regency)

Table 3. Total Production of Arabica Coffee in Temanggung Regency (tons)

Year	2016	2017	2018	2019	2020
Arabica Coffee	800.01	731.81	913.00	964.87	878.93

(BPS of Temanggung Regency)

Not only the economic side, but MSMEs also need to consider the environmental side, aiming to implement a sustainable business. Developing economies of the world today are having a greater percentage of the world environmental problems which can be largely attributed to the activities of profit driven entrepreneurs. In pursuit of profit, entrepreneurs have carried out activities that resulted in the turbulent nature of our business environment and the negative environmental externalities as well as the undervaluing natural resources, leading to their over-exploitation and depletion which constrains sustainable development and the performance of business organizations [3]. The positive ones include improving economic activities, which contributed to community welfare. Whereas, the negatives include air, water, and land pollution, which created inconvenience [4]. The findings from the study of Adomoko [5] show that environmental collaboration positively relates to sustainable innovation and this relationship is moderated by environmental commitment. The results also show that sustainable innovation is positively associated with SME growth. The results suggest that sustainable innovation mediates the environmental collaboration-SME growth relationship. The influence of Environmental Sustainability as a mediation variable can mediate between process and product innovations on SMEs' performance by 100% (full mediation) and 70% (partial mediation) between marketing innovations to the implementation of SMEs. Product innovation, process, and marketing are not necessarily for-profit purposes but must pay more attention to the environment in determining the innovation strategy implemented so that the development of SMEs in West Sumatra can be developed and sustainable [6]. The results from Tjahjadi [7] empirically support the theory of sustainability and entrepreneurship in the research setting of Indonesian MSMEs. The results also imply that the owners/managers of MSMEs need to balance economic, environmental, and social issues in their business. In the era of sustainable development and environmental awareness, manufacturing MSMEs need to adopt a green market orientation and carry out green innovation in their business processes to obtain a better business performance. This practice is very important, as the coffee industry could also affect the environment if it is not handled properly. The problems that often arise include; the production process is inefficient in using energy and water, chemicals-use in the production, the un-recycled coffee's waste, and un-environmental friendly on the packaging.

Businesses should consider the environmental, social, and economic aspects (Triple Bottom Line) to achieve maximum and sustainable business performance. The increasing market and land-use for Arabica coffee cannot be utilized optimally by MSMEs in Temanggung regency as they are less of innovation through the development of the economy and environment. According to Schumpeter, the concept of innovation in the economy includes the process of introducing new products or qualities, and new production methods to customers, penetrating new markets, controlling new sources of raw materials, and running new organizations. In this case, innovation is an important thing for the MSMEs, especially MSMEs Temanggung Arabica Coffee to maintain a sustainable business [8]. From the previous description, it needs to conduct research, entitled " Developing Economic and Environment on Innovation Practice of Sustainable Product in MSME Temanggung Arabica Coffee ". The study aimed to see the stages of economic and environmental development carried out by the MSMEs Temanggung Arabica coffee in improving the Innovation Practice of Sustainable Products.

2 Literature Review

2.1 Triple Bottom Line

The concept of the Triple Bottom Line was originally developed by John Elkington in 1999, known as the concept of "Cannibals with Forks: the Triple Bottom Line of 21st Century Business". The concept describes the importance of profit, the planet, and people [9]. A successful business can be seen from accounting information that reports its profits and fulfills responsibilities to the environment (planet) and social responsibilities (people). The Triple Bottom Line approach explains that the company is influenced by internal and external factor [10]. Companies must be able to balance the economy to give benefits to the community and preserve the environmental balance of each activity [11].

2.2 Economic Development

Economic development should become the priority dimension, related to the cash flow of money that involves reporting income or expenses, business climate factors, employment, and business diversity factors. Specific examples include personal income, human resource costs, change of establishment, job growth, percentage of firms in each sector, internationalization, and so on [2]. Meanwhile, the concept of economic development proposed by Schumpeter (The theory of economic development) is an increase in output caused by innovations created by business actors through creativity which includes the discovery of new products and markets with the aim of qualitative improvement of the economic system [8].

2.3 Environmental Development

Social development refers to the social dimension in several ways, including; company, community, or region, and may include measures of education, equity, and access to social resources, health and well-being, quality of life, and social capital. The participation rate of the female labor force, average income, relative poverty, percentage of employees with degrees or certificates of high school, organizational learning ability, knowledge sharing between organizations, and so on. Organizational Learning Capability is a relevant tool for MSMEs as it provides access to social resources. In this way, MSMEs with a High Level of

Organizational Learning Ability can collect and report information both inside and outside [2]. The adoption of environmentally friendly production practices is part of a broader strategy to improve overall business performance. The application of environmentally friendly innovation practices allows companies to overcome inefficiencies in each production line [12].

2.4 Innovation Practice of Sustainable Product

Innovation Practice of Sustainable Product is the result of new knowledge and sustainability. This process consists of the technical design, research and development, manufacturing, management, and commercial activities that constitute the marketing of a new (or improved) product. Innovation involves two dimensions: technical and non-technical. Product innovation practice involves two dimensions: efficiency and accuracy. The efficiency of innovation reflects the effort to achieve a certain level of success, while the accuracy of innovation reflects the success level of the innovation. The innovation process consists of stages, starting from discovery to implementation, which success depends on the efforts of the company. This process plays an important role in the success of innovation. MSMEs can achieve sustainable development through innovation if they consider the innovation development process [2]. Innovation Practice of Sustainable Product is a change to existing products and processes, to achieve better sustainability results through investments without creating additional costs or cost-savings. Innovation Process of Sustainable Product may define as new products, services, and processes through combining ideas, concerns, and knowledge from various stakeholders [13].

3 Method

The research was a qualitative descriptive study. The study aimed to understand the stages of economic and environmental development carried out by the MSMEs Temanggung Arabica coffee in improving the Innovation Practice of Sustainable Products. Second, the research intended to describe the current state of the subject or object of the survey, based on the facts obtained from the key information and participants, and the observed behavior. The research site was in the UMKM Temanggung Arabica Coffee. The source of information was the owner and/or the representative (trusted by the owner). The research scope was all activities related to economic and environmental development activities on the Innovation Practice of Sustainable Product. Data was collected through Focus Group Discussion (FGD), in-depth interviews, observation, and literature study. Key informants were the chairman of the Geographical Indication Protection Society (MPIG) Temanggung, the actors of the MSME Temanggung Arabica Coffee, Office of Trade Temanggung Regency, and Office of Agriculture Temanggung Regency.

Table 4. Framework Interview

Variable	Questions	Reference
Economic Development	Sales growth	Yuan et al. [14]
	Net profit growth	Yuan et al. [14]
	Labor/Employee training costs	Muñoz-Pascual et al. [15]
	Facilities for labor/employee	Muñoz-Pascual et al. [15]
Environmental Development	Practice of energy-saving	Muñoz-Pascual et al. [2] and Chiuo et al. [16]

Variable	Questions	Reference
	Water-saving practices	Muñoz-Pascual et al. [2] and Chiuo et al. [16]
	Waste segregation practices	Muñoz-Pascual et al. [2] and Chiuo et al. [16]
	Use of chemical additives	Muñoz-Pascual et al. [2] and Chiuo et al. [16]
	Strategy to minimize the waste	Muñoz-Pascual et al. [2]
<i>Product Innovation Practice</i>	Replacing products that do not sell well in the market	Tohidi and Jabbari [17]
	Developing new product beyond the core product	Tohidi and Jabbari [17]
	Developing new product in line with the core products	Tohidi and Jabbari [17]
	Environmentally friendly product design & development	Tohidi and Jabbari [17]
	Average time for product innovation	Tohidi and Jabbari [17]
	Average cost for product innovation	Tohidi and Jabbari [17]
	Increasing market share	Tohidi and Jabbari [17]
	The level of consumer satisfaction toward the product innovation	Tohidi and Jabbari [17]

4 Finding and Discussion

This study interviewed 17 entrepreneurs of Arabica coffee in Temanggung, conducted several FGDs, and made observations. From the data collection process, several facts were obtained regarding the process of economic and environmental development on the Innovation Practice of Sustainable Product in MSME Temanggung Arabica coffee.

All of MSME had run the core business processes well, starting from purchasing raw materials, production processes to marketing. Raw materials were purchased from farmers around Temanggung Regency, especially land at the foothills of Mount Sindoro and Mount Sumbing (highland areas where arabica coffee grows). Some MSMEs bough coffee bean, and other bought roasted-coffee bean.

Most MSMEs bought the coffee bean, then continued to the sorting process. Coffee beans were sorted by quality. The stage also separated the coffee bean from dirt and poor quality, defective or damaged bean. The sorted coffee bean must be processed immediately because the long-stored bean will trigger a chemical reaction and reduce the quality of the coffee bean.

After the sorted stage, the coffee bean was then washed and dried. This process will affect the character and taste of the coffee, so it must be handled properly. This process is different for each MSME, depending on the target market. These processes include; full washed (this process uses water and the flavor tends to be fruity, more acidic, and mild), semi-washed (this process is almost the same as full washed but without removing sap), natural process (freshly harvested coffee bean is directly dried for about two weeks to produce natural fermentation. After dried, the skin and flesh will be easy to break and separate from the green bean. This process creates the complexity of the taste and flavors), honey process (is almost the same as

the natural process, but left the shell, to get a very high sweetness character with balanced acidity), and the natural wine process (similar to the natural process but with a period of 30-60 days, will produce a strong taste and wine sensation flavor in coffee). Environmentally-friendly production practices at this stage were a form of efficient use of water. The process uses well-water. And, efficient use will certainly affect the use of electricity (water pumps) to be low and the reduce the waste water. In addition, in this process, MSMEs no longer use chemicals to wash coffee beans. And the waste products (coffee bean-skin waste reused to make tea, animal feed, and fertilizer). This finding is in line with Hakimi [18], who stated that implementing clean production practices will help businesses in minimizing the costs of waste management activities to encourage higher business profits.

After producing green beans, the next process is the roasting process. This process will also greatly affect the characteristics and taste of the coffee product. The coffee roasting process has various ways, including; drying (remove the moisture), light roast (roasted at a temperature of 180 °C to 205 °C, to get a mild taste with a strong sour taste and high caffeine), a medium roast (roasted at a temperature of 210 °C to 220 °C, to get a sweet taste with lower caffeine), and dark roast (roasted at 240 °C, the natural oils contained in the bean will come out, thereby reducing or even eliminating the character of acidity, and the taste tends to be bitter). Environmentally-friendly production practices in this stage were efficient using electrical and gas energy. Efficiency in electrical energy use will certainly have an impact on PLN electricity bills. The efficiency of gas use will certainly have an impact on the purchasing of the gas.

The next process is the packaging process. This process is the final stage of the production process. The coffee grounds are wrapped in plastic or paper packaging, then tightly sealed and vacuumed. After the product was ready, it continued to the marketing process. The MSMEs run 2 marketing channels, namely online and offline. Each channel has advantages and disadvantages, usually following the target market. Most MSMEs that apply environmentally friendly production practices have an impact on sales and profits, although not much but quite significant. This strategy is proven to be able to face the price war because of their superior product quality. As stated by Porter [19] cost leadership is a strategy carried out by business actors by achieving the lowest production costs to create economies of scale advantages. The low production costs can also be an entry barrier for competitors to enter the business in the same field. Moreover, this competitive advantage grows from the benefits created by the MSMEs Temanggung Arabica coffee to its buyers where the more organic the processing and production of coffee, the more competitive advantage and impact to high demand.

A good company operational process, of course, is supported by good human resources. Most MSMEs scheduled employee training that has an impact on improving employee quality and performance. Then, it impacts production efficiency, product quality, and service to consumers. The costs incurred for employees were directly proportional to productivity and sales. Some (50%) MSMEs do product development to products other than coffee, for example, chocolate, coffee skin tea, coffee picking tours, pastries, and cakes. The product innovation is more motivated by economic factors, rather than the application of environmentally friendly practices.

Based on the description, the development of a triple bottom line [9] from the stage of raw material purchasing to marketing) at the MSME Temanggung Arabica Coffee influence the performance of sustainable product innovation. In line with the findings of Pascual et al. [2], social and environmental development are two important antecedents for the Innovation Practice of Sustainable Product. The practice is also in line with the theory of product development by Philip Kotler and Kevin Lane Keller [20] which explains the product

development is a strategy in creating business or business growth by creating new product offerings as an extension of the core product or modification of previous products to current market segments and to enter new market segments. Through product innovation, the MSMEs of Temanggung Arabica Coffee hope this strategy can help to increase the marketing performance. Another research conducted by Nataya [21], that product innovation has a positive and significant effect on marketing performance. Companies that implement product innovation will have higher revenue growth and profitability. The application of product innovation can lead to an increase in the sales volume of the company's products. In contrast, the lack of product innovation can affect company profits and consumer dissatisfaction [22].

5 Conclusion and Suggestion

The MSME Temanggung Arabica coffee certainly has an economic orientation as a top priority, just like a business company. All these MSMEs run the company's operations at the most efficient cost possible, to obtain the maximum possible profit. Most MSMEs have implemented environmentally friendly production practices, such as energy and water efficiency, chemicals-free, and reusing production waste. This application is the result of sustainable innovation performed by MSMEs, which has an impact on increasing profits, due to efficiency and increased sales. The article suggests, for the future, the MSMEs need more comprehensive environmentally friendly production practices sustainably at all production stages to achieve higher effectiveness and efficiency.

This research is limited to a descriptive analysis of the stages of economic and environmental development on the Innovation Practice of Sustainable Product in MSME Temanggung Arabica Coffee, so it needs future research with a quantitative approach.

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