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# How Frugal Innovation is Applied by MSMEs for Sustainability

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**Abstract**—This study aims to explore how frugal innovation (FI) is needed in developing countries and how FI plays a vital role in the business model so that it can contribute to sustainable development. A qualitative approach was used to analyze the data. Data were collected using in-depth interviews with 7 micro, small and medium enterprises (MSMEs) in developing countries. By exploring 7 cases of FI, this study contributes to the literature about the role of FI in sustainability. The findings reveal how MSMEs entrepreneurs apply the FI strategy to overcome problems so that they can continue to meet the needs of customers in a developing country.

**Keywords**—Frugal innovation, frugality, sustainable development, sustainability, MSMEs

## I. INTRODUCTION

Innovation strategy plays an important role for businesses to face challenges in a business world that is highly dependent on the internet of things. Increased competition for innovation requires a lot of resources and implies increased uncertainty and risk. Large companies tend to have more experience with project innovation leading to organizational innovation capabilities. Large companies with greater resources are considered to be more ready to innovate [1, 2]. However, it is not only big companies that are ready for innovation. Small scale companies or Small and Medium Enterprises (SMEs) need to invest in innovation compared to large companies. SMEs have the advantage of adapting to environmental changes more quickly than large companies and having the agility and short hierarchies so they can make decisions faster [3, 4].

FI is a do more with less strategy [5]. Entrepreneurs must learn to do more with less, the creation of more significant business and social value while minimizing the use of diminishing resources such as energy, capital and time. This answers the challenge that it is necessary to apply innovations that are suitable for MSMEs in developing countries, especially in Indonesia. FI is considered a powerful way to serve clients in a sustainable manner so that it supports the Sustainability Business Model (SBM) [6].

Frugal innovation (FI) has emerged as a new way to serve consumers in developing countries, especially low-income

consumers to achieve low prices and reach the base of the pyramid, companies need to adapt their products and business models. The FI approach can improve customer requirements by addressing unmet needs, improving consumer situations, and providing opportunities for companies to enter new markets [6, 7, 8].

Today, Indonesia is the fourth most populous country in the world and the tenth-largest economy in purchasing power. According to World Bank, Indonesia has made great strides in poverty reduction, reducing poverty rates by more than half from 1999 to less than 10% in 2019, before the COVID 19 pandemic. Indonesia took over the G20 Presidency in 2022 and encouraged all countries to work together to achieve a stronger and more sustainable recovery from the impacts of the pandemic. Based on data from the Coordinating Ministry for Economic Affairs of the Republic of Indonesia 2021, MSMEs are the most important pillars of the Indonesian economy. The contribution of MSMEs to GDP is 61.07% and has the ability to absorb 97% of the total workforce and can collect up to 60.4% of the total investment. MSMEs experience many challenges such as limited resources and pandemic impacts. There is a need for an innovation strategy from MSMEs by utilizing all limited resources because in the future MSMEs will also have many opportunities as a result of national and global economic recovery. In addition, further research into ecosystems, diffusion, and commercialization of FI is needed considering its relevance for developing countries, especially Indonesian markets.

In order to reach their target market groups, frugal innovators need to create partnerships and entrepreneurial ecosystems by rebuilding existing business models in terms of FI [6, 9]. FI mainly serves low-income customers in developing countries, but there is a great deal of pressure from various groups and environmental complexities such as large amounts of waste, depletion of resources and damage to the environment. Companies also have to compete in markets where their customers are very price-sensitive and prefer affordable products. Therefore, companies need to adopt FI to address these various issues and serve them in a sustainable way [10,11]. MSMEs can start working to develop sustainable business models.

Studies on FIs and sustainable business models (SBM) in developing countries are still rare because the focus on FI and SBM is still conducted separately. However, studying them together can provide significant insights into understanding how to sustainably serve customers in developing countries.

Therefore, the aim of this study is to explore how FIs develop in low-development countries and contribute to sustainable MSMEs. This study shows how the implementation of FI in MSMEs can contribute to sustainable development by developing products to serve underserved customers with affordable products.

## II. METHODOLOGY

The application of a qualitative approach is necessary to understand the MSME actor's view as frugal innovators, given the exploratory nature of this study. This allows us to describe and possibly explain events and experiences as well as discuss phenomena of interest with approaches such as an in-depth interview approach to be able to produce unexpected results and ensure a more accurate representation of new phenomena [12, 13]. The purposive sampling technique was used to recruit participants. Seven (7) MSMEs entrepreneurs are contacted through personal connections of researchers who are all members of the MSME community in East Java, Indonesia. Informants must meet the criteria that they have run micro enterprises legally for more than 1 year and apply technology in their business. In Indonesia, micro enterprises classifications are had annual sales of a maximum of IDR 2 billion and have a minimum workforce of 1-4 people.

Data was collected through in-depth interviews. This process aims to obtain information for research purposes by means of question and answer while face to face between the interviewer and the informant or the person being interviewed, with or without using an interview guide. All interviews were conducted in May 2022. Most of the interviews were conducted face-to-face and only three were conducted by audio call. The researcher informed the participants of the research objectives prior to the interview and obtained verbal consent from all participants. Each interview lasted, on average, 30 minutes. Informants are free to end the interview at any time. Data were recorded and transcribed into interview text documents.

In addition, secondary data is also used such as documents in the form of writing, pictures, and the work of SMEs as a support and complement to primary data sources obtained through in-depth interviews. Documentation in this study was done by taking photos and recordings at the time of the interview.

## III. RESULTS

### A. Informants Profile

The informants interviewed were seven people consisting of four men and three women. The seven informants are also owners of a fashion business (3 informants) and a food and beverage (F&B) business (4 informants) in East Java, Indonesia. The age range of the informants is 35-48 years old and has run the business for a minimum of 2 years to more than 15 years.

There are more informants from the F&B sector because the number of MSMEs in the F&B sector is the largest in East Java. The transaction value generated by this industry also occupies the highest position in the balance of trade in East Java.

TABLE I  
DEMOGRAPHIC OF INTERVIEWEES

No	Name	Brand	Category	Established
1	Aryo	Batik Wistara	Fashion	2009
2	Dibya	Interim Clothing	Fashion	2014
3	Arin	Arinz Design	Fashion	2014
4	Ivan	Ejji	F&B	2020
5	Iwan	Ashitaba Trawas	F&B	2011
6	Lily	Buzet Catering	F&B	2006
7	Diah	Diah Cookies	F&B	2011

### B. FI Enablers

Several previous researchers revealed the various FI enablers. However, in developing countries, especially MSMEs in Indonesia, not all enablers are suitable because of different economic, social, and cultural differences. The results of the interview found 14 FI enablers based on the informant's statement. These enablers are in line with the research results of several experts. Table 2 contains the FI enablers obtained from this study based on the statements of the informants which are also supported by the results of previous studies. These 14 enablers show that there is an application of FI to MSMEs in Indonesia.

## IV. DISCUSSION

### A. Low-cost products & manufacturing

One of the biggest challenges for MSMEs is limited capital. This causes MSMEs to have efficiency in terms of production. A low-cost production process will cause the price of the final product not to be too high. Informants stated that they carried out an efficiency process by making machine engineering and production process tricks to save the cost of buying expensive production machines.

*“We make batik canting making machines from wood, there is a drill bit to make the motif. it turns out that there are others that are more efficient and economical, so we use used goods such as used cardboard to be used as batik motifs. For example, if we sew, 1 shirt, we need a lot of experts, if we can all make one in our production” (Aryo)*  
*“If I buy an expensive machine, I end up engineering the design from wood. the important thing is to be able to do chopping and cutting activities. I can save money and there are no expenses, I only pay for electricity because the wood used is used wood from the rest of the production of wood craftsmen.” (Iwan)*



TABLE II  
FI ENABLERS OF MSMEs RESULT

No	Frugal Innovation		
	Enablers	Source	Informant
1	Low-cost products & manufacturing	Hossain (2021), Niroumand et al. (2020)	Aryo, Diah
2	Local supply chain	Hossain (2021)	All informants
3	Low-cost raw material	Hossain (2021)	Aryo, Dibya, Iwan
4	Local employment	Hossain (2021)	All informants
5	Sustainable product	Hossain (2021), Radjou and Prabhu (2014)	Aryo, Dibya, Arin, Iwan
6	Technology	Hossain (2021), Shibin et al. (2018), Kumar & Puranam (2012)	Aryo, Ivan, Iwan, Lily, Diah
7	Environmental aspect	Khattak et al. (2021), Niroumand et al. (2020), Shibin et al. (2018)	Aryo, Dibya, Iwan, Diah
8	Social value & ethics	Khattak et al. (2021), Shibin et al. (2018)	Aryo, Iwan, Diah
9	Government funding & support	Shibin et al. (2018)	All informants
10	Government policies & regulations	Shibin et al. (2018)	All informants
11	Marketing	Niroumand et al. (2020)	All informants
12	Out of the box thinking	Hossain (2021)	All informants
13	Distinct brand creation	Niroumand et al. (2020)	Aryo, Dibya, Arin, Diah
14	New products for a niche market	Hossain (2021), Ostraszewska and Tylec (2015)	Dibya, Arin, Lily

Source: Interview data processing

**B. Local supply chain**

Local supply chains are needed to be able to further improve the economy of developing countries through MSMEs. the informant said that it is also necessary to support restrictions on imports of raw materials and impose local mandatory for raw materials

*“If you use natural fiber, where do you buy it from? it should be from Indonesia, and we can reject it if it's not locally made. this is an easier step. in a locally sustainable way.” (Dibya)*

**C. Low-cost raw material**

Resources in the form of raw materials require special attention. how to get raw materials but still quality. Informants get their raw materials by planting and empowering local farmers

*“Ashitaba plants are grown in the village by empowering local farmers, harvested, and then processed into a tea according to the resources.” (Iwan)*

**D. Local employment**

Human empowerment is important. with local empowerment, it will help MSMEs have a role in job openings and reduce unemployment.

*“I just take the workers from the surrounding villages, friends, and relatives. need to empower local farmers so that local wisdom can be maintained. Human empowerment is the most important.” (Iwan)*

*“In my village there are many unemployed mothers, so I finally invited them to work together. Finally, women empowerment happens”. (Diah)*

**E. Sustainable product**

Products need value to be able to differentiate from competitors and have a unique selling point. by becoming a sustainable product, the product not only has value creation but also benefits the environment. This is in accordance with the informant's statement.

*“The whole chain of activities that we do from the purchase of raw materials to the production process. For example, choosing a material made of polyester or natural fiber could be a small step that we can do. from the patchwork as production waste, we don't have to throw it away, but we can use the remnants of the fabric to be accessories to add value to our products.” (Arin)*

*“Ashitaba is a natural health product, the process must not contain chemicals and also no waste. We use natural waste as goat feed and fertilizer.” (Iwan)*

**F. Technology**

Technology is an important factor in FI. technology can help the process efficiency and effectiveness of MSMEs not only in the production process but also as a medium of learning and easy market access for MSMEs.

*“MSMEs must open as wide as possible by utilizing information technology, they do not have to depend on the government anymore but can learn from the media.” (Arin)*

*“Digital technology is important to help us in the sales process so that it is easy to meet the right market for us.” (Diah)*

**G. Environmental aspect**

MSMEs have a very large role in the environment. Environmental issues are increasing, such as the waste produced by factories. the informant said that education on waste management is needed to be able to minimize the negative effects of waste

*“Fashion waste is definitely there, but the important thing is how to treat the waste.” (Aryo, Dibya)*

*“In culinary arts, there is waste, I have taught them to treat waste, for example making control tanks, and water absorption. ashitaba waste does not exist. former chopped leaves for goat food and also fertilizer.” (Iwan)*

*“MSMEs need capital to increase market awareness.” (Iwan)*

#### H. Social value & ethics

MSMEs need to pay attention to social values and norms as well as social ethics. how MSMEs can be useful in social life so as to create a positive business environment. This is also felt by the informants.

*"We are more for the benefit of others, from the side of humanity. we are more for the benefit of others, from the side of humanity. by empowering people with disabilities to be productive and create jobs for them."* (Aryo)

*"We must get used to sharing around the business environment, must be able to share benefits so that our business is trustworthy."* (Diah)

#### I. Government funding & support

MSMEs need funding from the government. However, another support that can be provided is training, mentoring, and market access, especially to be able to make SMEs go global.

*"Need access to capital, promotion space, access to imports to be able to go global."* (Aryo)

*"You can't expect too much from the government, but there needs to be assistance and training."* (Iwan)

*"Allocation of assistance for capital for MSMEs must be more evenly distributed."* (Lily)

#### J. Government policies & regulations

Government policies and regulations are also needed to maximize support for MSMEs, especially economically. According to the informant, regulations are needed to require MSMEs to have good digital literacy and policies to require the use of local materials.

*"The government makes applications using IT to help sales, but there must be assistance so that MSMEs are technology literate."* (Aryo)

*"The government really needs to support the localization of materials."* (Dibya)

#### K. Marketing

FI in the marketing process will realize efficiency and effectiveness in reaching the right market. The use of digital marketing is cheaper than conventional marketing strategies. this is supported by the statements of the informants.

*"I can sell clothes for up to 3-4 million in department stores, the problem is not in our products but our market access which is not yet open and we don't know yet. maybe we sell in the wrong market. Each product has its own market share."* (Arin)

*"Many promotions and campaigns through digital marketing strategies. this is very successful for depleting stock, especially during a pandemic."* (Diah)

*"My target market is young people so I need to advertise on social media because it is cheaper than conventional but needs to be in accordance with the target market."* (Iwan)

#### L. Out of the box thinking

Successful frugal innovators also depend on out-of-the-box thinking because innovation depends on their creative way of thinking. from several statements of informants, it can be

concluded that MSMEs require a strong mentality, do not stop learning, and are always *adaptive*.

*"There are no bad fashion products, it's just that they haven't found their target market yet."* (Dibya)

*"In wistara a little capital, a little profit but repeat orders. According to our capacity, the important thing is to keep our quality."* (Aryo)

*"If we have money but don't have a strong mentality then we can fail."* (Iwan)

*"We have to follow what people like, something new. The business continues to learn, and continue to process. Many SMEs are busy seeing difficulties but not seeing opportunities."* (Diah)

*"We need to do research first to test whether our product is really interesting and many people like it before we invest too much."* (Iwan)

#### M. Distinct brand creation

MSMEs need to have brand creation as part of a strong brand identity. If MSMEs have their own uniqueness and value, then according to the informant, MSMEs will get more consumers who are in accordance with their target market so they are not caught in a price war.

*"Need its own characteristics that sometimes have not been found. because if there is no difference, the only difference will be the price. which one is cheaper?"* (Dibya).

*"It must be able to brand, for example in Wistara the difference is in buttons and batik motifs which are the hallmark of the Wistara brand."* (Aryo)

#### N. New products for a niche market

MSMEs should not be afraid to create products that have a niche market. According to the informant, niche markets have the advantage that MSMEs will be able to focus more on investing their resources for specific target markets that are right according to their capacities.

*"For example, there are many who sell ready-to-wear batik, but my niche market is different, from my target market, many of which are modest fashion or Muslim clothes. focus on the niche market we are aiming for and the problems we can solve so we can get more turnover."* (Arin)

*"I stick to healthy food; no nutrients should be reduced. The market focuses on patients who have special health conditions, not just consumers who diet because the diet is seasonal. so more to consumers who want to be healthy."* (Lily)

## V. CONCLUSION

The challenge for MSMEs is to survive from competitors and economic conditions, and how to make their brand exist. The product must sell, with a less investment but big profits. MSME endurance needs to be improved. They must be able to hit the hearts of customers so they need self-introspection for product improvement, be unique, and be adaptable so they can cover the different market needs.

In a developing country, that many price-sensitive

customers, there needs to be service excellence to become valuable. Collaboration is an important thing to achieve goals faster such as collaboration with fellow MSMEs. For this reason, MSMEs need to join the association or community. MSMEs need to think globally because even large companies often share resources. Trust is important, MSMEs must always maintain the trust of customers and partners. Consistency is also important. mentoring for MSMEs is important to go up the class

Legality, licensing, and quality standards need to be fulfilled by MSMEs. MSMEs should not rely too much on government support. They must be able to be independent, and mentally strong. They need to join associations to speed up processes such as opening market access. MSMEs must have a mindset that does not consider themselves small and must promote and pick up customers. Entrepreneur mentality is the main thing.

This study shows how FIs can serve customers in developing countries, especially in Indonesia, and play a vital role in sustainability. Innovation for developing countries requires new business models adapted to offer affordable products, so knowledge at the grassroots level is essential to fulfilling local needs [10, 18].

This study has limitations, namely exploration through 7 informants who are limited to the field of fashion and F&B in East Java, Indonesia in providing deeper insight into the FI phenomenon. For this reason, this research provides opportunities for future research. The enablers obtained in this study can be used as a determining factor for FIs in creating a sustainable business model. It is expected could explore into the process, detailed approach, and how SMEs apply and come up with the suggested guideline at the end.

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