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The Role of Environmental-Based "Green Startup" in Reducing Waste Problem and its Implication to Environmental Resilience

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Abstract

The waste problem has become a global public concern in sustainable development goals (SDGs) through the concept of "zero waste". The uncontrolled waste problem causes environmental quality degradation which then affects the environmental resilience of an area. The application of green business practices in a green startup companies is one of the business development models that supports the goals of a green economy and environmental sustainability. This study aims to find the development of a green startup of "Sampah Muda" in reducing waste problem in Semarang City and to describe the implication of developing a green startup "Sampah Muda" to environmental resilience. The results demonstrate that the development of "Sampah Muda" is carried out by implementing environmental-based business practices through the application of green startup characteristics and based on the right development basis as a determining factor for the startup success factors. Research shows that the development of environmental-based startup "green startup" "Sampah Muda" has positive implications for environmental resilience. Environmental resilience conditions are reflected in the preservation of environmental elements including abiotic, biotic, and socio-cultural from the implementation of environmental ethics in startup activities.

Keywords

Development, Green Startup, Waste Management, Environmental Resilience.

1. Introduction

The waste problem comes along with the development of the industrial revolution and globalization. The growth of the manufacturing industry and the shift in people's consumption behavior resulted in an increase in the amount of waste each year. The waste problem is a national problem that require a comprehensive and integrated management system from upstream to downstream (Ediana et al., 2018). The development of modern technology, information and communication has made it easier for human to produce solutions to solve existing problems. Currently the use of technology in overcoming problems has been packaged in a business model that is run through a startup company. Startup is an institution created to create new and innovative product or service under condition of high uncertainty (Bukhori, 2021). Solving environmental problems requires business practices that are not only profit-oriented, but also evaluate social impacts and environmental sustainability. Companies must fulfill the triple-p bottom line principle, in which the focus of their business activities is towards products or services that have a positive environmental impact and contribute to the environmental goals of a green economy (Bergset & Fichter, 2015). Green strategies fundamentally help companies make decisions that have a positive impact on the environment (Olson, 2008). However, the concept of green startup is not very popular in the startup ecosystem in Indonesia. It is not easy for startup developers to generate profits by working in the environmental sector, this is because environmental issues are closely related to social and political aspects.

Environmental resilience is one of the determining aspects in the realization of a nation resilience. Environmental problems cannot be solved solely by relying on problem solving through the old approach. Innovative problem solving is needed through a technological approach that can accelerate problem solving and can be developed on a broad scale. The development of environmental-based startup is one approach that can be applied by the private sector as a form of alignment with environmental sustainability. However, in Indonesia, the environmental-based startup development model is still limited to be found both in the academic literature and previous studies. Likewise in practice in the field, an environmental-based business approach can still be seen as mere jargon by companies in creating public images and perceptions. Thus, the research to find the development model of an environment-based startup company becomes an urgency in efforts to resolve existing environmental problems and to create a business climate that supports the realization of environmental resilience.

2. Literature Review

2.1 Development

According to Sujadi (2003) development is a process or steps to develop a new product, or improve an existing product, which can be accounted for. Meanwhile, business development is an organizational process that ensures continuous and sustainable improvement of existing businesses and contributes to identifying and developing new business opportunities. Business development aims to make a business run in a sustainable manner.

2.2 Startup

Startup are institution designed to create new products or services in conditions of extreme uncertainty (Ries, 2011). Startups are formed to find regular and measurable business models (Blank et al., 2012). In running a business there is a life cycle that takes the business from the idea phase to the growth phase to the maturity phase. According to Petch (2016), there are 5 stages of a startup's life cycle, namely: seed and development, startups, growth and establishment, expansion, and maturity and possible exit. Business success is the main goal that must be achieved in building a company. According to Jaya et al. (2017) several factors that determine the success of a startup consist of: timing, team, ideas, business models, and funding.

2.3 Green Startup

Green startups are "startup" startups with products and services that have a positive impact on the environment and contribute to the environmental goals of a green economy (Fichter & Weiß, 2013). Green startups are a platform that can develop and implement products or services that contribute to green economy goals such as reducing greenhouse gas emissions, increasing energy efficiency, adopting a circular economy approach and others (Bergset & Fichter, 2015). According to Bergset & Fichter (2015), there are 3 characteristics that must be fulfilled by startups to be able to say a green company or green startup, which consists of characteristics related to (1) products, (2) entrepreneurship, and (3) strategy.

2.4 Environmental Resilience

Environmental resilience is a subset of national resilience. Environmental resilience is freedom from social instability due to environmental degradation (Butarbutar & Soemarno, 2013). According to Holling (1996) ecologically resilience focuses on maintaining the existence of a function of the disturbance in which instability conditions can be changed in other stability domains. The meaning of environmental resilience is grouped into three categories, namely: (1) concern about the negative impact of human activities on the environment, (2) concerns about the direct and indirect impacts of environmental changes that trigger environmental instability, (3) individual concerns over environmental insecurities (Butarbutar & Soemarno, 2013; Febriana, 2017).

2.5 Environmental Ethic

Environmental ethics are various environmental moral principles which are guidelines or directions of practical human behavior in pursuing the realization of environmental morals (Hudha & Rahardjanto, 2018). The core of an environmental ethical system that is necessary and can serve as a foundation for sustainable development is (1) believes that the availability of natural resources owned by the planet earth is limited; (2) humans are part of nature; and (3) humans are not superior to nature in relation to environmental elements including biotic, abiotic and socio-cultural components (Neolaka, 2008; Febriana, 2017). According to Law No.32 of 2009 concerning Environmental Protection and Management, the community has the same rights and opportunities as broad as possible to take an active role in environmental protection and management. The active role of the community is carried out to (1) increase awareness of environmental protection and management, (2) increase independence, community empowerment and partnerships, (3) develop community capacity and leadership, (4) develop

community responsiveness to carry out social supervision, and (5) develop and maintain local culture and wisdom in the context of preserving environmental function.

3. Research Design and Methods

This research is a qualitative research with descriptive research type. This study uses a study approach to a problem that occurs in the field. Creswell (2010) states that a case study is a research strategy in which researchers carefully investigate a program, event, activity, process, or group of individuals. This study is interesting because of the limited of green startups development in Indonesia. The focus of this research is to find the development of green startups based in depth and to describe the implications of developing green startups based on environmental resilience. This research took place in the city of Semarang, Central Java Province where "Sampah Muda" is one of the startup companies engaged in the environmental sector. This study uses data collection techniques consisting of observation, interviews, literature study, and internet searching. This study uses triangulation techniques with sources. Processing and analyzing data are carried out through reflective analysis and interpretation of the data found in the field.

4. Discussion

"Sampah Muda" is a startup company engaged in the waste management service sector based on digital platforms. "Sampah Muda" operates in Semarang City, Central Java Province. "Sampah Muda" comes with environmental issues as a core value in running the business. Waste management uses the concept of community participation-based waste management and the 3R approach (reduce, reuse and recycle). "Sampah Muda" manages waste piles that can still be reused and then distributes the collected waste from the community to the appropriate recycling partners. Until now, "Sampah Muda" has 15 dropping points in Semarang City.

4.1 Startup Development Basics

Business success is the main goal that must be achieved in building a company. Until this research was conducted, "Sampah Muda" had reached the stage of maturity and possible exit. The exit step was carried out by going through a merger and acquisition (M&A) process with PT. Waste For Change Alam Indonesia "Waste4Change". Waste4Change is a social company that engaged in waste management services such as Sampah Muda, however Waste4Change has been operating in the first place and has a wider market segmentation than Sampah Muda. The results showed that the development of "Sampah Muda" is based on five basic development consisting of timing, team, idea, business model, and funding. The five bases for development are critical success factors in the development of Sampah Muda. Timing, team and ideas are the main factors in the success of Sampah Muda. This is consistent with the study of Jaya et al. (2017) which states that the timing and team greatly influence the success of startups. Perdani (2018) found that work experience, age, educational background and skills of founders affect startup growth. Likewise, the team aspect is one of the internal factors of the company that affects business growth (Sitepu & Nathasya, 2017; Alamsyah, 2011).

"Sampah Muda" had a solid founding background in fulfilling the aspects of commitment, competence, experience and mastery of issues. The team of "Sampah Muda" founder had a

personal capacity that was previously actively involved in environmental activist activities, entrepreneurship and technology. According to Alamsyah (2011) an important factor that determines business success was how the founders dedication to their startup, where how much time and attention given by startup founders would determine the sustainability of startup. The dedication of the "Sampah Muda" founder was shown by leaving his previous work which was carried out in duplicate when he started the startup and decided to focus on managing the startup fully. The business model and funding were supporting factors for the success of the Sampah Muda. That was in line with research by Saura et al. (2019) which states that the business model was one of the supporting indicators of startup success. In contrast to Jaya et al. (2017) who found that a business model was not really needed in the initial phase of startup formation. Sufficient funding from bootstrap and external parties has made "Sampah Muda" able to ensure the sustainability of startup operations to date. In line with research conducted by Jaya et al. (2017), it is clear that funding was a supporting factor for startup success.

4.2 Green Startup Characteristics

There is a need to make a distinction regarding the types of organizations that develop and implement sustainable product or service innovations, where startups are the main market players in the development and market recognition of radical sustainable innovations, while gradually innovation tends to be more the territory of established companies (Fichter & Weiß, 2013). There is a difference between startups in general and environmental startups based on "green startup". Bergset & Fichter (2015) state that the fundamental difference between green startup and startup, in general, lies in the Characteristics related to product, entrepreneurship, and strategy. The three characteristics can be one of the prioritized characteristics and / or are related to one another. The results show that the development of "Sampah Muda" was carried out by implementing environmental-based business practices by fulfilling the characteristics of green startup related to product, entrepreneurship and strategy.

The characteristics of green startup owned by "Sampah Muda" supported one another, including product, entrepreneurship and strategy. This is in accordance with the research of Bergset & Fichter (2015) which states that the types of green startups can be distinguished based on product, entrepreneurial and strategy characteristics, but the three characteristics can be related to one another. The principle of environmental sustainability applied in green startup helps "Sampah Muda" in determining competitive advantage and being unique to the company (Bergset & Fichter, 2015; Huang et al., 2009; Olson, 2008). One of the reasons for adopting sustainable business practices was the recognition of opportunities in the market (Schick et al., 2002). This is in line with Olson (2008) who says that green strategies fundamentally help companies to make decisions that had a positive impact on the environment. In addition, these three characteristics were not only covered an important aspects of green startup, but also became investor considerations in determining their investment decisions (Wustenhagen & Teppo, 2006).

4.3 Participation of "Sampah Muda"in Reducing Waste Problem in Semarang City

In 2018 Semarang City was recorded as having a daily waste production of 5,248 m3, where the volume of waste transported per day was 4,544 m3 with a percentage of 88.50% (BPS, 2018). Based on the statistics of the volume of waste transported per day, there is 11.50% percentage of waste that still cannot be transported. This shows that the facilities and infrastructure owned by

the Semarang City Environmental Department are currently unable to meet the needs of waste management services in Semarang City. Waste management services that have not been able to meet current needs have led some people to manage waste by burning it until it is disposed of in an inappropriate place. Participation from the private sector is required to be able to assist the Semarang City Environmental Department in meeting the unmet needs of waste management. Previous cooperation has been carried out between the Semarang City Government and PT. Narpati Agung Karya Persada Lestari as a third party in managing waste at the Jatibarang TPA. However, this cooperation has not been maximized because it has not been able to reduce the volume of waste that ends up at the Jatibarang TPA. Waste processing at TPA Jatibarang is still just buried in the ground, inorganic waste is left in the dump for scavengers (Pradana and Subowo, 2017). Thus, the inorganic waste recycling process at TPA Jatibarang has not been carried out optimally.

"Sampah Muda" comes at a time when Semarang City needs service improvements in waste management, particularly in fulfilling the infrastructure for inorganic waste management for recycling. "Sampah Muda" operates privately in serving the needs of waste management in Semarang City. When viewed from an environmental aspect, the existence of "Sampah Muda" in waste management services in Semarang City contributed to absorbing the need for waste management services that have not been served by waste management facilities and infrastructure of the Semarang City Environmental Department. From an economic aspect, "Sampah Muda" also contributed to increasing the community's economic resources from waste saving services. "Sampah Muda" participated in increasing the uptake of raw materials from the recycling industry. In addition, "Sampah Muda" also participated in increasing public awareness of environmental issues, especially in waste management. Thus, it can be said that "Sampah Muda" participated in reducing waste problems in Semarang City even without a formal partnership process with the Semarang City Environmental Department.

4.4 Implication of Environmental-Based Startup "Green Startup" Development to Environmental Resilience

Environmental resilience is a manifestation of the fulfillment of harmony between biotic, abiotic and socio-cultural elements that have the ability to adapt to all forms of dynamic change. The existence of a business entity is influenced by how stable and supportive the environment is in which the business is run. Therefore, it requires the participation of startup companies in protecting and managing the environment to ensure environmental sustainability in the future. Environmental ethics is a parameter to see the extent to which values, attitudes and responsibilities towards the environment are applied by "Sampah Muda" as a foundation in carrying out every business operational process. Environmental ethics guide the moral attitude of "Sampah Muda" to ensure that every stage of business is carried out in an environmentally responsible manner. The implementation of environmental ethics in the development of "Sampah Muda" is carried out through the activities of managing, maintaining and taking over environmental sustainability.

The results show that the development of "Sampah Muda" had a positive impact on environmental resilience through the environmental resistance indicators used in reference to Law No.32 of 2009 concerning Environmental Protection and Management which

consist of (1) increasing awareness of environmental protection and management, (2) increase independence, community empowerment and partnerships, (3) foster community capacity and leadership, (4) foster community responsiveness to conduct social supervision. Based on the results of research through indicators of developing and maintaining local culture and wisdom in the context of preserving environmental functions, the development of "Sampah Muda" had not have an impact on environmental resilience. The implementation of environmental ethics in the development of "Sampah Muda" had positive implications to increasing environmental resilience. This is in line with research conducted by Fitriyani (2015) which showed that the application of environmental ethics had positive implications for regional environmental resilience through the availability of ecosystems, control of waste and pollution, the continuation of the local socio-cultural system and increased understanding of environmental concepts. Likewise, research conducted by Febriana (2017) explains that the role of society which was based on environmental ethics contributed to increasing environmental resilience.

5. Conclusions and Recommendations

This research resulted in two conclusions, namely: first, the development of "Sampah Muda" was carried out by implementing environmental-based business practices by fulfilling the characteristics of green startup related to products, entrepreneurship and strategy. "Sampah Muda" development was based on five basic development consisting of timing, team, idea, business model, and funding. The five bases for development were critical success factors in the development of Sampah Muda. The development of "Sampah Muda" has succeeded in bringing startup through the startup development cycle, which consists of the seed and development stage to the maturity and possible exit stage.

Second, the implication of "Sampah Muda" development had a positive impact on increasing environmental resilience in Semarang City. The positive implication of "Sampah Muda" development can be found in four indicators of environmental resilience consisting of (1) concern in environmental protection and management, (2) independence, community empowerment and partnerships, (3) community capacity and initiative, (4) community responsiveness to do social surveillance. Environmental resilience conditions were reflected in the preservation of environmental elements such as abiotic, biotic and socio-cultural. Efforts to protect environmental elements were carried out through the implementation of environmental ethics in the development of "Sampah Muda" which consists of environmental management activities, environmental preservation activities, and environmental sustainability taking care activities. In addition, the existence of the "Sampah Muda" service also contributed to reducing waste problems and fulfilling the need for waste management services that have not been fulfilled by the Semarang City Government.

This study provides recommendations for startup to: (1) Consider timing, team, idea, business model, and funding as a basis for developing startup companies. (2) Applying "green startup" environment-based business practices as a form of participation in maintaining environmental sustainability. Higher education is expected to increase research on green startup. Due to the limited literature that examines the implementation of green business at startup in Indonesia. Investors are expected to consider green startup as a priority in investment as a form of investor siding in maintaining environmental sustainability. For the government, it is expected to be able

to (1) determine and provide regulations related to the application of green business practices in the development of startup companies, (2) Diffuse innovation in green startup development as an effort to expand the development of green startup in the startup ecosystem in Indonesia.

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