

Green Innovation for SMEs in Indonesia – A Literature Analysis

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Abstract

Improving the performance of small and medium enterprises (SME) means enhancing the economics of a nation, considering that SMEs are the biggest part in global economic activities. The higher the SME's activities, the higher the economic growth occurs in a country. However, nurturing SMEs activities affect the environment, while the damage inclines every day in a worrying level. There is a huge demand to suppress down the environmental damage rate globally, as if it causes a contradictive goal with the economic perspective. Thus, a compromise should be made between both expectations, even it is not easy to do so. Answering to the problem, discussions have been made among scholars around the world, including in Indonesia as an emerging country. Theories and methods were proposed, varying based on characteristics in each region. Especially in Indonesia, there is a lack of literature review on this field, which is actually required to depict the current condition, to evaluate the discussion effectiveness and to develop future improvements. Therefore, this article aims to fill this gap by presenting scientific articles related to the topic and reviewing the discussion. Subsequently, a classification of the articles based on identified themes is conducted. And further the classification is used to see more specific gaps in the discussion and to provide recommendation for the next studies.

Keywords: sustainable innovation, green technology, small business.

I. INTRODUCTION

IT has been widely known that small and medium enterprises (SME) plays an important role in growing a country's economy. The SMEs create wealth by providing products and services to consumers, while simultaneously activate potential including local natural resources, arts, creativity, and also poor labors. By absorbing labor from low and middle classes, an SME distributes welfare to all classes in a society. Thus an SME enacts even distribution to the low-middle class and also to the rural area. It becomes the bridge for low and middle class society to climb up the ladder of economy, moreover in developing countries [1]. These characters are among other importance of SMEs existence, which create a special attention for improving the SMEs.

However, the existence of SME still faces numerous challenges in several dimensions. The challenges are found in previous studies, and they particularly represent common themes comprising the difficulties in gaining capital, low productivity, no idea to penetrate a

well-established market and poor management of human resources [2, 3]. Only a few of SMEs can move forward to become big companies due to these barriers. Therefore, scholars have proposed strategies in their studies to overcome the barriers from many perspectives. And among these perspectives, aspect of innovation seems to stand out as a creative solution for SME in surviving the competition, moreover for scaling up among the crowd [4].

As mentioned before, most of business entities in the world are SME. Although the criteria in categorizing an entity as an SME or not may differ in different countries, previous studies have shown the fact that SME is the main player in running the economy [3]. They contribute in providing the most job vacancies and generating the biggest income accumulatively, while in the same time performing excellent flexibility throughout crisis and difficult times. Examples on how SME plays a dominant role in a country are presented by several prior studies such as in Malaysia [5], Nigeria [6] (Obi et al., 2018), Spain [7] and in USA [3]. All

these studies indicate strong relation between the economic growth and SME activities, and also exhibit the big percentage of SME part in realizing the growth. While in Indonesia, SME also dominate the economic activity. In 2011, it was recorded that there were 64.194.057 SMEs, which represents 99.99% of the existing business units and these units employed about 96,2% from national labour at the time [8].

According to the above data, from the perspective of sustainability, it can be assumed that SMEs are performing huge activities which also can lead to environmental problems, in spite of their economic benefits. Studies related to this were conducted by Redmon et al [9], Jaiswal [10] and Graafland [11]. One can say it is an irony, where on one side the existence of SME is in the center of the economic wheel, but on the other side they may endanger the environment. In developing countries, the condition may be more severe due to the lack of environmental management system adopted by the SME. For example, ISO 14001 is partially not suitable to be applied in SME, moreover in developing countries where financial capital is a big constraint to deal with [11]. However, the irony has led to the sustainability concept adoption, where economic, social and environmental dimension are combined into one framework. It is the sustainable innovation which should be brought to the SMEs, to disrupt the system and the technology in SMEs so they can change the production and consumption pattern. In this framework, the growth of SME may be optimized while the environmental impact is minimized.

Although sustainable innovation framework promises an ideal growth for the future, the implementation of the concept still has many challenges. Especially in developing countries, the environmental sake frequently conflicts with economic and social reasons. Thus, it needs special attention from the scholars from various perspectives, to bring the ideal concept into reality. While the implementation would be related to a specific condition, tradition and local behavior, it is assumed that it would be better to limit the discussion by a country's geographic constraints. However, there is a lack of review on how the discussions on this topic have been made by the scholars so far. Janita and Chong [12] have discussed the B2B e-business adoption in Indonesian SMEs, nevertheless they did not provide sufficient information about other field instead of B2B e-business. Therefore, based on this explanation, this paper's main aim is to develop a review about bringing the sustainability to be implemented in SMEs in Indonesia. Due to the number of articles from reputed journal related to the topic is limited, a systematic review is hardly conducted. Thus the discussion is carried out by analyzing literatures,

while further solution is proposed to be implemented in next studies.

II. SME CHARACTERISTICS IN INDONESIA

As described previously, SME is the dominant business entity in Indonesia. Articles discussing the condition of SMEs in Indonesia are numerous. Most of these articles discuss determinant factors for the SME performance in business development, using quantitative and qualitative methods. On the other side, the weaknesses of SME are relatively common including the amount of financial capital, lack of skillful and qualified human resources and lack of access to wider market, less networking and gap between the SME and experts. The findings vary based on the business field, social capital and the financial capability of each SME, which leads to complex characteristics.

Obviously, Indonesian SMEs still lag behind in comparison to SMEs in developed countries due to some reasons [13, 14]. Regarding the financial capital barrier, Rosengard and Prasetyantoko [15] described the difficulties in proposing loans for the SMEs, addressing to the slow growth of SME in Indonesia. An important factor in this matter is trust, where banks tend to ask many requirements from the SME, while the business does not have sufficient resources to accomplish the requirements. Another challenge is the competition with the imported products, especially from China [16]. Due to tax and other aspects, several domestic-made products suffer higher production cost, and end in higher prices compared to the imported products. Even though ethnocentrism has a significant effect for the consumer's purchasing decision [17], domestic products are in a vulnerable condition because economic consideration plays a bigger role for Indonesian consumer. Empirically, we can see imported products from China dominate e-commerce in mainstream marketplaces in Indonesia.

To overcome the problems, one prominent solution is creating or adopting innovation into the SME's system or products. Studies investigating this topic were conducted by Indriastuti [18] and Sukwadi et al [16]. Indriastuti discusses the urgent of new technology support in enhancing SME's marketing performance, while Sukwadi explains correlations between the uncertainty era and the importance of agile innovation. With innovation, SME could build eminence to gain bigger market share, or even create new market segments for their products. However, creating or adopting innovation into SME has its own complexity. Rahayu and Day [19] found that the new technology adoption by SMEs in Indonesia is still in an early stage, thus it obstructs more benefits to be obtained. Similar

conclusions were drawn by Tambunan [8]. Especially in rural area, reluctance to innovation has become a barrier to reach wider market, mostly caused by the managers' level of knowledge about agility. Moreover, there are perceptions among the SME executives that new technologies and new methods are too complex and being a burden to the organization [20]. In other words, the decision maker's entrepreneurial initiative is a crucial determinant factor for an SME to be able to adopt innovation and to become more agile.

In order to increase the initiative, networking and knowledge sharing among SMEs are recommended and proven in improving the innovation culture, business performance and sustainable competitive advantage [21]. Indriastuti [18] also support this notion, where developing network is considered to be useful in conducting the knowledge sharing. The network may be used for improving the knowledge, skill, or even as a form of cooperation between SMEs. One of the implementation is presented by Priyono et al [22], where one SME hires another SME to manage new technologies, like an outsourcing cooperation system. This cooperation is useful in a dynamic situation such as in Covid pandemic in year 2020. In this framework, scholars and experts are needed as facilitators to enhance the cooperation, and to develop better system for the network.

Another essential characteristic of SMEs in Indonesia is the role of the government. SME still has less independency and requires assistance, and Indonesian government has allocated many programs through various offices. However, prior study shows sometimes the assistance has not been proportionally provided. There are overlapping programs among related offices. Moreover, even though the programs are conducted repeatedly, the impact is occasionally less accurate due to the lack of the SME's involvement in evaluation [23]. Thus studies are still required to support the adjustment between SMEs and the government and as independent evaluations for future improvements.

III. SME AND SUSTAINABLE INNOVATION

In this part, we review articles related to the main topic with several keywords, comprising: sustainable, or green, or eco innovation SME Indonesia, in Scopus database from year 2010 until 2021. We collect data using Harzing's Publish or Perish software to obtain cited-based sequenced articles. Using keywords: sustainable innovation SME Indonesia, we find 12 articles, while using green and eco for replacing 'sustainable' terminology we find 17 and 8 articles respectively. Totally we have 37 articles. Subsequently, by eliminating similar articles for each keywords and

other irrelevant results, then we have 28 articles. The amount is only a few, indicating the discussion of the topic is still in an early stage.

Further, we review the articles according to the abstract. Based on the review, we eliminate 5 articles from the list. The eliminated articles are from 'sustainable' keyword search, and they discuss only social and economic dimension of SME, while our discussion in this study focuses on environmental dimension of sustainability. The rest 23 articles are assumed to be included in the topic, therefore they are further classified and analyzed for the review. The next step is conducted by reviewing the full text of articles, to overview the discussions and see the direction of the topic.

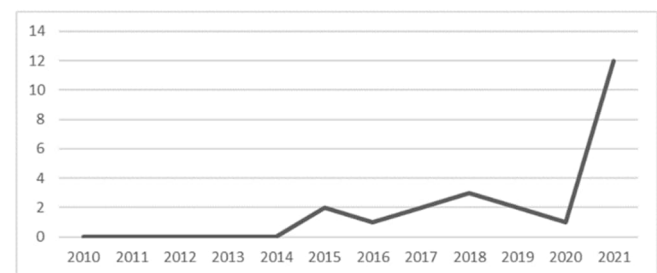


Figure 1. The number of articles per year from 2010 to 2021

From 2010 until 2014, there were not any articles published indexed by Scopus related to the topic. Subsequently there were 1 to 3 articles per year from 2015 – 2020, before the number increases drastically in 2021 to 12 articles. Overall, the topic is getting more attention in the last 6 years, and the trend seems to incline in the future (Figure 1). However, we need to understand the current discussion to define the future interesting topic. Based on the review result, there are four themes identified from the articles. The themes are presented in Table 1 below. Each article can represent more than one theme.

Table 1. Article theme classification

Themes	Articles	Num. of articles
Identifying supporting factors for sustainable innovation in SME	Widya Hasuti [24]; Hamid [25]; Najib [26]; Lestari [27]; Nuryakin [28]; Aryanto [29]; Fadhilah [30]; Zandi [31]; Muafi [14]; Aryanto [32]; Awaludin [33]; Aisjah [34]; Syarief [35]; Anik [36]; Astuti [37].	15
Identifying the role of sustainable	Najib [26], Nuryakin [28]; Aryanto [29]; Fadhilah [30]; Muafi [14]; Aisjah	9

innovation in SME	[34]; Syarief [35], Anik[36]; Astuti [37].	
Developing strategy and supporting tools for sustainable innovation in SME	Fernando et al [38]; Prabawani et al [23]; Herman [39]; Yuniarty et al [40]; Yuniarty et al [41].	5
Assessing the implementation of sustainable innovation in SME	Effendi [42]; Muafi [43];	2

Most authors discuss about how to enhance sustainable innovation in SME, and they provide various perspectives for the topic. There are internal and external aspects, while human and non-human factors can also be used for further classifications. This is an important topic to investigate, because to improve sustainable innovation in an organization, we have to recognize the factors emphasizing it. Najib et al [26] highlighted the essential role of supportive leadership in creating sustainable organizational culture, while the culture shall give positive impacts to the sustainable innovation process inside the organization. Widya-Hasuti et al [24] mentioned similar internal aspects with intrapreneurship terminology as one of them. The study also mentions the role of adopting innovation from the outside of the organization. In addition, Hamid et al [25] described how the adoption of new technology was significantly affected by intellectuals, strengthened by the findings by Anik et al [36]. However, the article also reported the role of external aspects such as the government who can provide environmental policies for the industries. The policies are crucial especially in developing countries with low environmental awareness, as also discussed by Lestari et al [27]. Moreover, Lestari et al also provided another external aspect which is the customer pressure, where it can impose the SMEs to improve the process of sustainable innovation in the organization. Thus sustainable innovation in SMEs may be correlated with the consumer's environmental responsibility.

Vice versa, the benefits of the sustainable innovation itself should be clarified as a motivation for implementing the concept. From the perspective of SME, profit must be the main consideration to ensure the business sustainability. Explanation of the benefits by implementing sustainable innovation is required for the decision makers in developing future strategies. Nuryakin [28] found the significant correlation between the green innovation process and the green product's success, while Aryanto et al [29, 32] also revealed that eco innovation positively affect the marketing

performance. Similar results were obtained by Fadhilah et al [30], although Muafi's findings eventually did not support the theory [14], because in the study they did not find significant effect of green human resource management (GHRM) on supply chain and business performance. In the case of uncertainty era, Syarief [35] has mentioned the contribution of innovation and green orientation to the SME performance. Strengthening the notion, Anik et al [36] stated that green innovation and environmental corporate ethic are parts of the SME's competitive advantage. Generally, the findings in these studies support the benefits of the sustainable innovation for the SME in economic and social dimension. Based on this, SMEs in Indonesia are recommended to start giving more attention to develop sustainable innovation and the supporting factors in their organizations.

Subsequently, researchers should develop strategies and tools in order to apply the sustainable innovation properly in SMEs. There are challenges, constraints and barriers that have to be solved with cultural methods and technical approaches. Several studies have been conducted based on Indonesian SMEs characteristics, as presented previously in Table 1. Herman and Anggraeni [39] have built a model explaining the position of sustainable innovation in supporting SME's green product. The model can be used to conduct further researches related to the topic. More specific, Fernando et al [38] has revealed the needs of SME to identify prioritized aspects in implementing the sustainable innovation. It can be recognized as the internal strategy of SME in implementing the sustainable innovation. While for the external strategy, Prabawani et al [23] proposed the concept of alliance-network to overcome problems encountered related to the role of government and knowledge sharing among SMEs. And from technical perspective, Yuniarty et al [40] developed the digital eco-dynamic system to improve the sustainable innovation.

And at the end, assessment should be done to evaluate the implementation, whether it has been done appropriately and right on the target or not. Muafi [43] assessed the implementation of sustainable innovation in creative SMEs in Yogyakarta. The implementation has been done efficiently, although improvement is still in demand especially for advancing the information technology usage among the SME doers. And in the same region, Effendi et al [42] conducted an analysis related to the SMEs' technological innovation performance based on green supply chain. The result shows that SMEs basically have good acceptance to innovation associated with ecological importance. While the amount of SMEs optimizing the technology is still low compared to the sum of SMEs in the region,

knowledge sharing and cooperation with other stakeholders are recommended for the next action.

IV. CONTRIBUTION TO THE TOPIC AND FURTHER STUDIES

Previous section describes topics discussed in articles related to the main topic, which is green innovation in Indonesian SMEs. According to the search in Scopus database year 2010 – 2021, discussions about the topic especially in formulating strategies based on local characteristics and assessment on the concept implementation is still rare. While the urgency of the sustainability realization is inclining rapidly, thus many studies are in a high demand to conduct in supporting the idea. Indonesia as an emerging country with a wide geographical area and high disparities in culture has the biggest number of SMEs in South East Asia. It makes the studies even more crucial for the future improvement.

This article portrait the current condition of discussions among scholars related to the green innovation in SMEs in Indonesia. Relevant articles from reputed journals and proceedings are presented and classified based on the theme categories to ease the understanding. Compared to the needs of improvement, information and proposed strategies by scholars are considered as not sufficient to enhance a progressive performance increase for the SMEs. Therefore, scholars and experts in related topic are encouraged to conduct further studies. Locally based researches are preferred to develop strategies, whether in organizational, cultural, economic or technical perspective, because the differences in the organizations' backgrounds may lead to various solutions. The implementation also requires assessment periodically from different angles of knowledge, so that a continuous improvement can be achieved gradually.

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