

# Green Knowledge Sharing, Green Entrepreneurship, and Sustainable Development Goal Among Small-Medium Business

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**Abstract:** Escalating small-medium businesses can be a motor for poverty alleviation and economic growth. However, the increasing business may lead to environmental issues. This study aims to investigate the connection between green knowledge sharing behavior, green entrepreneurship, and sustainable development goals among small-medium businesses, as well as confirm green entrepreneurship as a mediator. This study involved structural equation modeling to deal with proposed research questions, with approximately 250 small-business actors as respondents. The findings confirm and are aligned with theory and previous studies that green knowledge sharing behavior has a significant effect on green entrepreneurship and sustainable development goals. Similarly, there is a robust link between green entrepreneurship and sustainable development goals. This study also confirms the role of green entrepreneurship as a mediator in this relationship. The practical and managerial implications are presented in this paper regarding the matter of green knowledge sharing behavior and green entrepreneurship.

**Keywords:** Green entrepreneurship, green knowledge sharing behavior, sustainable development goals

## INTRODUCTION

Entrepreneurship plays a vital role in the economic development of a country and can be a social capital for society (Mahfud et al., 2020). Entrepreneurship has been shown to significantly contribute to sustainable economic development through the creation of large job opportunities, poverty reduction, and long-term improvement of economic growth and overall well-being (Wardana et al., 2020). The new business creation can play a crucial role in the local business and global economy as it can counter high levels of unemployment and provide income for a nation, with small-scale new businesses absorbing as much as 10–50 workers (Suminah et al., 2022). Entrepreneurship has proven to be a solution to economic stagnation, particularly during the COVID-19 crisis experienced by the world (Ratten, 2021).

With the continuously increasing global economy, this also poses a serious threat to the environment due to the consistent escalate in the use of fossil fuels (Ali et al., 2021). One of the current global issues is environmental damage. The issue of global warming caused by waste is no longer a new issue in this decade. Prior evidence showed that developing countries have also begun to move forward as the world has shown serious attention to the target of neutralizing carbon (Yusoff et al., 2023). In this case, the largest

environmental degradation is caused by entrepreneurial factors, industries, and tourism (Yousaf et al., 2021). However, the increasing number of new businesses also poses a significant problem for the environment as a result of business and industrial activities that coincide with the advancement of technology. As a result, there is pressure to engage in eco-innovation to develop new products that meet social and environmental requirements (Salim et al., 2019).

In developing countries, the level of diversity is higher, where it is expected to be a country that may be different from others in terms of development, awareness, and ability to engage in environmentally based businesses (Tien et al. 2020). In the last decade, much new attention has been given to innovation as a way for policymakers to achieve more systematic improvements in business environmental practices and performance. Therefore, in order to achieve sustainable environmental-based economic development, the concept of green entrepreneurship needs to be applied to business actors (Santini 2017). However, this concept has been given less attention to businesses in Malaysia (Hameed et al. 2021). In the last decade, it is also believed that the sustainable development transition will require a large number of business actors who apply the concept of green entrepreneurship (Gunawan 2012).

There is limited research on the relationship between green knowledge sharing, green entrepreneurship, and sustainable development goals among small-medium businesses. While studies have shown the positive impact of green entrepre-

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neurship on sustainable development goals, the potential benefits of green knowledge sharing have not been fully explored. It is important to understand how small-medium businesses can effectively share their knowledge and experiences in adopting sustainable practices to contribute to the achievement of sustainable development goals. Although some studies have investigated the impact of green entrepreneurship on sustainable development goals, there is a need for more research on how green knowledge sharing can contribute to sustainable development goals among small-medium businesses.

Therefore, the main objectives of this research are as follows: RQ1: how does green knowledge sharing affect green entrepreneurship? RQ2: how does green knowledge affect sustainable development goals? RQ3: how does green entrepreneurship mediate the interplay of green knowledge sharing and sustainable development goals?. The study makes several important contributions to the literature on green entrepreneurship and sustainable development among small-medium businesses. First, it provides insights into the importance of green entrepreneurship in achieving sustainable development goals, particularly in the context of small-medium businesses. Second, it highlights the role of green knowledge sharing in facilitating the achievement of sustainable development goals. Finally, it offers practical implications for policymakers and practitioners to promote green entrepreneurship and knowledge sharing to achieve sustainable development goals.

## LITERATURE REVIEW

### Theory Foundation and Hypothesis

Green knowledge sharing, green entrepreneurship, and sustainable development goals (SDGs) are linked concepts that play a crucial role in promoting small and medium-sized businesses in various countries. Sustainable development is a core element of green entrepreneurship, and it involves the integration of social, economic, and environmental factors to ensure long-term growth (Yousaf et al., 2021; Lotfi et al., 2018). While green knowledge sharing refers to the exchange of information and expertise on green matters among small-medium enterprises, which is essential for promoting sustainable development (Abbas & Sagsan, 2019). Small-medium business are considered the backbone of the economy, and their contribution to the achievement of SDGs is significant (Jimenez et al., 2021). In this regard green entrepreneurship provides small-medium business with a unique opportunity to address these challenges by creating innovative and sustainable business models that promote economic growth while protecting the environment (Alshebami et al., 2023).

The theoretical foundation of green knowledge sharing, green entrepreneurship, and SDGs is underlined in the concept of sustainable development. Sustainable development is a holistic approach that aims to strike a balance between economic growth, social well-being, and environmental protection (Voegtlin & Scherer, 2017). Meanwhile, green entrepreneurship is an essential driver of sustainable development, as it provides small-medium business with the tools and resources. Green knowledge sharing is also an important

aspect of sustainable development, as it allows small-medium business to share best practices and learn from one another (Zhou et al., 2020). The exchange of information and expertise on green technologies and practices is essential for promoting sustainable development and achieving SDGs (Jimenez et al., 2021). Therefore, the set of hypotheses are presented as below.

H1. Green knowledge sharing behavior affects green entrepreneurship

H2. Green knowledge sharing behavior affects sustainable development goals

H3. Green entrepreneurship affects sustainable development goals

H4. Green entrepreneurship mediates the link between green knowledge sharing behavior affects sustainable development goals

## METHODS

### Design

This research utilized a quantitative approach that involves deductive reasoning to formulate research hypotheses. It aims to address the formulated problems and achieve research objectives by testing hypotheses to determine the effect of research variables. The study employed a survey method to collect data from a population sample. The variables in the study are latent variables measured using a questionnaire as a research instrument. The survey was administered by providing questionnaires to the respondents.

### Sample and Data Collection

The researcher conducted the study while respecting the confidentiality of the participants' information. The respondents were approached in a non-coercive manner and asked to voluntarily complete the questionnaire. The researcher has promised to keep all information related to the participants confidential and to only use their responses for the purposes of the study. This study involved simple random sampling directed to approximately 250 business actors in East Java of Indonesia using online survey. We further validate the responses and used 218 eligible responses for further analysis.

### Measurement

In order to design the questionnaire for the green market emergence construct, the measures used in the survey were chosen based on the existing literature. To measure green knowledge sharing behavior, we adopted a prior study from Rubel et al. (2021), while to estimate green entrepreneurship, we adopted instruments from Tien et al. (2020). Lastly, to measure sustainable development goals, we adopted a well-established paper from Lotfi et al. (2018). The Likert-type scale used for all items ranged from 1 (strongly disagree) to 5 (strongly agree).

### Data Analysis

The study employed a quantitative approach to achieve research objectives. The data were analyzed using structural equation modeling (SEM) using AMOS. The use of covari-

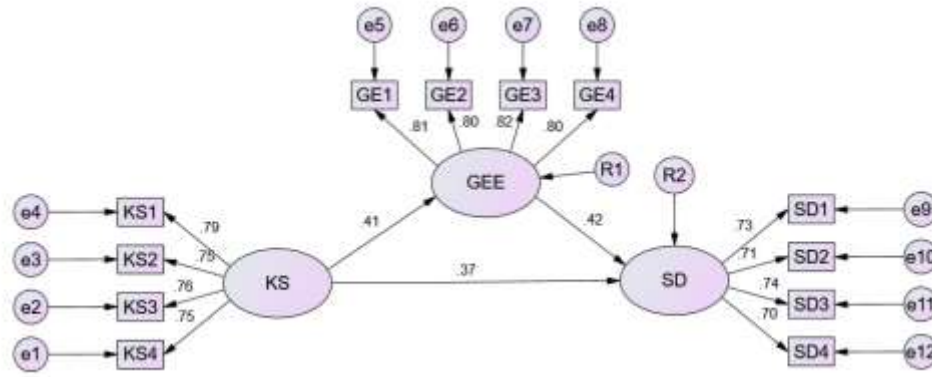


Fig. (1). Structural Model.

ance-based structural equation modeling (CB-AMOS) can analyze equations with both dependent and multiple independent variables and simultaneous relationships. For data analysis, we followed the procedures from Anderson and Gerbing (1988), consisting of a measurement model and a structural model.

**RESULTS AND DISCUSSION**

**Measurement Model**

The measurement model assesses validity and reliability, beginning with the convergence validity of a reflective measurement model based on the correlation between item/component scores and the latent variable score. Ideally, loading factor values should be 0.7 or higher to be considered valid; Table 1 displays the loading factor measurement results. In addition, the statistical estimation exceeded the minimum cut-off value for composite reliability and convergent validity (AVE) in Table 2, ranging from 0.701 to 0.808. All items have CR scores ranging from 0.806 to 0.875, which means that composite reliability was established (Hair et al., 2020). However, we removed some items for green knowledge sharing behavior, green entrepreneurship, and sustainable development goals because the value is lower than 0.5. The discriminant validity was performed using the robust model, where the square root of the AVE of each construct should be greater than the correlation with any other construct to meet discriminant validity (Hair et al., 2020). In Table 2, the model has good discriminant validity as the loading values of each latent variable are greater than the other. We also conducted confirmatory factor analysis using pooled-CFA. The finding indicates that CMIN/DF=2.147, CFI=0.918, and TLI=0.903, indicating the model has categorized as good/fit.

Table 1. Validity and Reliability Estimation.

Construct	Loading Factor	CR	AVE
Green Knowledge Sharing Behavior			
KS1	0.791	0.823	0.586
KS2	0.751		

KS3	0.757		
KS4	0.749		
Green Entrepreneurship			
GE1	0.808	0.875	0.577
GE2	0.796		
GE3	0.817		
GE4	0.801		
Sustainable Development Goals			
SD1	0.730	0.806	0.621
SD2	0.708		
SD3	0.738		
SD4	0.701		

Table 2. Discriminant Validity.

	KS	GE	SD
KS	0.721		
GE	0.609	0.714	
SD	0.577	0.608	0.781

Note. KS=green knowledge sharing behavior, GE=green entrepreneurship, SD=sustainable development goals

**Structural Model and Hypothesis Testing**

The structural model analysis model is involved to deal with research hypotheses, primarily to understand whether green sharing behavior and green entrepreneurship influence sustainable development goals. The research hypothesis proposed can be addressed with a structural equation model through AMOS. Table 3 and Fig. (1) provide information about the result of the estimation using AMOS. The findings indicate that green knowledge sharing behavior has a significant effect on green entrepreneurship (coefficient = 0.37;  $p < 0.001$ ), and sustainable development goals (coefficient = 0.42;  $p < 0.001$ ), confirming H1 and H2. Indeed, green entrepreneurship has a significant effect on sustainable development goals (coefficient = 0.41;  $p < 0.001$ ), so hypothesis

H3 is confirmed. The role of a mediator variable in the connectivity among two other variables investigated undergoing mediation analysis. The process of mediating, we followed the suggestions from mediation estimation by Preacher and Hayes (2004) using the bootstrapping approach. As earlier mentioned, the direct effect before the full model in the relationship between knowledge sharing behavior and sustainable development goals is significant (0.000). After the mediating variable entered the model, it also resulted in a significant value (0.005), thus, green entrepreneurship acts as a partial mediator.

**Table 3. Hypotheses Estimation.**

Latent Variable	Direct Effect	Full Model	Decision
KS → GE	–	0.437**	H1. Confirmed
KS → SD	–	0.355**	H2. Confirmed
GE → SD	–	0.379**	H3. Confirmed
KS → GE → SD	0.405*	0.355**	H4. Confirmed (Partial Mediation)

Note. KS=green knowledge sharing behavior, GE=green entrepreneurship, SD=sustainable development goals, \*\* $p < 0.01$ ; \* $p < 0.05$ .

## DISCUSSION

The first finding indicates that green knowledge sharing behavior has a significant effect on green entrepreneurship. The basic rationale for supporting this result is that green knowledge sharing is a key factor in driving green entrepreneurship and promoting sustainable development. This finding confirms and is aligned with some prior studies (e.g., Alshebami et al., 2023; Nguyen et al., 2023) that mentioned that small-medium businesses with green knowledge sharing behaviors promote sustainable practices and develop innovative solutions, which can contribute to the Sustainable Development Goals (SDGs). In this study, green knowledge sharing involves the exchange of information, ideas, and best practices related to environmental sustainability (Chang & Hung, 2021). For this matter, small-medium businesses can learn from one another and collaborate on initiatives that promote sustainable development (Jimenez et al., 2021). This can lead to the development of new green products and services, as well as the adoption of more sustainable business practices.

In addition to affecting green entrepreneurship, green knowledge sharing behavior has a significant impact on sustainable development goals. This study corroborates several earlier works that showed this relationship (Zhou et al., 2020; Shahzad et al., 2020). When small-medium businesses engage in green knowledge sharing behavior, they are able to reduce their environmental impact and contribute to sustainable development (Wang et al., 2022). One way in which green knowledge sharing can affect sustainable development goals is by promoting the adoption of environmentally sustainable business practices. A prior study remarked that green knowledge sharing can impact sustainable development goals by promoting innovation (Nguyen et al., 2022). Indeed, this study confirms some studies (e.g., Wang et al.,

2022; Huang et al., 2022) that green knowledge sharing can help raise awareness about environmental issues and the importance of sustainable development. In sum, small-medium businesses with knowledge sharing can educate others about the impact of their actions on the environment, which in turn can create a culture of environmental responsibility.

The next result indicated that green entrepreneurship can directly affect sustainable development goals. The underlying rationale to support this result is that green entrepreneurship involves the creation of businesses that prioritize environmental sustainability and promote green practices in their operations (Tien et al., 2020). Based on this finding, it is argued that green entrepreneurship can have a positive effect on small-medium businesses contributions towards the SDGs. Some preliminary studies also noted that green entrepreneurship can create new job opportunities and promote economic growth (Santini, 2017; Ebrahimi & Mirbargkar, 2017). In detail, it can contribute to achieving SDG 8, which focuses on promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Lastly, this study confirmed the role of green entrepreneurship as a mediator for knowledge sharing behavior and sustainable development goals. Knowledge sharing behavior can lead to innovation, which in turn can help businesses achieve their sustainable development goals (Huang et al., 2020). Green entrepreneurship involves the creation of new businesses that prioritize environmental sustainability, and these businesses can serve as a model for others to follow (Yasir et al., 2023). Sharing knowledge about sustainability practices between businesses can result in innovative ideas that can help reduce environmental impact. Green entrepreneurs can serve as an example to other businesses by showing that being environmentally friendly does not have to hurt profits. By promoting green entrepreneurship and knowledge sharing, we can work towards achieving the Sustainable Development Goals outlined by the United Nations.

## CONCLUSION

This present paper investigated the role of green entrepreneurship in mediating knowledge sharing behaviors among small-medium business and sustainable development goals. The findings showed that green knowledge sharing behaviors has a significant effect on green entrepreneurship and sustainable development goals. In addition, there is a robust interplay between green entrepreneurship and sustainable development goals. This study also confirmed the role of green entrepreneurship as mediator for green knowledge behaviors and sustainable development goals. The study provides managerial and practical implications for business actor regarding green knowledge sharing, green entrepreneurship, and achieving sustainable development goals. In order to escalate green knowledge sharing and green entrepreneurship among small-medium businesses, it can involve partnerships local community, universities, and governmental institutions.

Furthermore, it is advised for small-medium businesses to participate in training programs and workshops provided by the government or non-business organization. This can be used develop their employees' skills and knowledge in envi-

ronmental sustainability. Later, these efforts are expected to help small-medium businesses in accomplishing sustainable business growth and improve their environmental performance. As other papers, this study has limitations that required to be provided in this section. This paper lies on the focus on small-medium businesses and may not be generalizable to larger businesses or other types of business. Lastly, the present study is based on self-reported data from the participants, which may be subject to bias. Thus, further scholars can involve an offline survey method.

## REFERENCES

- Abbas, J., & Sağsan, M. (2019). Impact of knowledge management practices on green innovation and corporate sustainable development: A structural analysis. *Journal of cleaner production*, 229, 611-620.
- Alshebami, A. S., Seraj, A. H. A., Elshaer, I. A., Al Shammre, A. S., Al Marri, S. H., Lutfi, A., ... & Zaher, A. M. N. (2023). Improving Social Performance through Innovative Small Green Businesses: Knowledge Sharing and Green Entrepreneurial Intention as Antecedents. *Sustainability*, 15(10), 8232.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin*, 103(3), 411.
- Chang, T. W., & Hung, C. Z. (2021). How to shape the employees' organization sustainable green knowledge sharing: Cross-level effect of green organizational identity effect on green management behavior and performance of members. *Sustainability*, 13(2), 626.
- Ebrahimi, P., & Mirbargkar, S. M. (2017). Green entrepreneurship and green innovation for SME development in market turbulence. *Eurasian Business Review*, 7(2), 203-228.
- Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110.
- Huang, W., Chau, K. Y., Kit, I. Y., Nureen, N., Irfan, M., & Dilanchiev, A. (2022). Relating sustainable business development practices and information management in promoting digital green innovation: evidence from China. *Frontiers in Psychology*, 13, 930138.
- Jimenez, E., de la Cuesta-González, M., & Boronat-Navarro, M. (2021). How small and medium-sized enterprises can uptake the sustainable development goals through a cluster management organization: A case study. *Sustainability*, 13(11), 5939.
- Lotfi, M., Yousefi, A., & Jafari, S. (2018). The effect of emerging green market on green entrepreneurship and sustainable development in knowledge-based companies. *Sustainability*, 10(7), 2308.
- Mahfud, T., Triyono, M. B., Sudira, P., & Mulyani, Y. (2020). The influence of social capital and entrepreneurial attitude orientation on entrepreneurial intentions: the mediating role of psychological capital. *European Research on Management and Business Economics*, 26(1), 33-39.
- Nguyen, T. T. T., Pham, H. C., Le, Q. H., Phan, T. T. H., Bui, V. H., & Nguyen, T. T. L. (2023). Moderating role of green knowledge sharing and employee green behavior among the relationship of green supply chain management, green entrepreneurship, and sustainable development goal: evidence from Vietnam textile sector. *Environmental Science and Pollution Research*, 30(20), 58866-58881.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior research methods, instruments, & computers*, 36, 717-731.
- Ratten, V. (2021). Coronavirus (Covid-19) and entrepreneurship: cultural, lifestyle and societal changes. *Journal of entrepreneurship in emerging economies*, 13(4), 747-761.
- Salim, N., Ab Rahman, M. N., & Abd Wahab, D. (2019). A systematic literature review of internal capabilities for enhancing eco-innovation performance of manufacturing firms. *Journal of cleaner production*, 209, 1445-1460.
- Shahzad, M., Qu, Y., Zafar, A. U., Rehman, S. U., & Islam, T. (2020). Exploring the influence of knowledge management process on corporate sustainable performance through green innovation. *Journal of Knowledge Management*, 24(9), 2079-2106.
- Suminah, S., Suwanto, S., Sugihardjo, S., Anantanyu, S., & Padmaningrum, D. (2022). Determinants of micro, small, and medium-scale enterprise performers' income during the Covid-19 pandemic era. *Heliyon*, 8(7).
- Tien, N. H., Hiep, P. M., Dai, N. Q., Duc, N. M., & Hong, T. T. K. (2020). Green entrepreneurship understanding in Vietnam. *International Journal of Entrepreneurship*, 24(2), 1-14.
- Voegtlin, C., & Scherer, A. G. (2017). Responsible innovation and the innovation of responsibility: Governing sustainable development in a globalized world. *Journal of business ethics*, 143, 227-243.
- Wang, S., Abbas, J., Sial, M. S., Álvarez-Otero, S., & Cioca, L. I. (2022). Achieving green innovation and sustainable development goals through green knowledge management: Moderating role of organizational green culture. *Journal of innovation & knowledge*, 7(4), 100272.
- Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, A. M., Wibowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: the mediating role of attitude and self-efficacy. *Heliyon*, 6(9).
- Yasir, N., Babar, M., Mehmood, H. S., Xie, R., & Guo, G. (2023). The Environmental Values Play a Role in the Development of Green Entrepreneurship to Achieve Sustainable Entrepreneurial Intention. *Sustainability*, 15(8), 6451.
- Yousaf, Z., Radulescu, M., Sinisi, C. I., Serbanescu, L., & Paunescu, L. M. (2021). Harmonization of green motives and green business strategies towards sustainable development of hospitality and tourism industry: Green environmental policies. *Sustainability*, 13(12), 6592.
- Yusoff, M. N. Y., Ridzuan, A. R., Soseco, T., Wahjoedi, Narmaditya, B. S., & Ann, L. C. (2023). Comprehensive outlook on macroeconomic determinants for renewable energy in Malaysia. *Sustainability*, 15(5), 3891.
- Zhou, M., Govindan, K., & Xie, X. (2020). How fairness perceptions, embeddedness, and knowledge sharing drive green innovation in sustainable supply chains: An equity theory and network perspective to achieve sustainable development goals. *Journal of Cleaner Production*, 260, 120950.