

**LAMPIRAN 2. ARTIKEL JURNAL TERINDEKS SCOPUS Q3
(AGRARIS UMY)
Implementation of Green Business Value Chain
In the Madurese Spice and Traditional Medicine Agroindustry**

Moh. Rum1*, Burhan2

Agribusiness Study Program, Trunojoyo University Madura
Agricultural Industrial Technology Study Program, Trunojoyo University Madura
Correspondence e-mail: rum@trunojoyo.ac.id

ABSTRACT

Green Business Value Chain (GBVC) was developed from the Green Supply Chain Management (GSCM) model, which is a process of integrating environmental concepts into supply chain management, starting from product design, selecting suppliers and purchasing raw materials, manufacturing processes, and product distribution to consumers, and industrial waste management. The evaluation and performance of GBVC have been widely researched, but there have not been many publications regarding the implementation of GBVC in the spice and traditional medicine agro-industry. This research aims to build a measurement matrix for the level of implementation of GBVC in the Madurese spice and traditional medicine agro-industry. The analysis method uses the supply chain operations reference (SCOR) model framework and the GBVC framework developed by Hasan et al (2019). Based on the results of the matrix analysis, the level of implementation of GBVC in the Madurese spice and traditional medicine agro-industry consists of 5 dimensions and 27 Measurement Items. The green design dimension is the dimension that is at the highest level of implementation of the GBVC model and is included in the initiating implementation category, while the other dimensions are at the implementation level considering it currently.

Keywords: Green Business Value Chain, Spices, Traditional medicine, Dimensions

INTRODUCTION

In the era of globalization, the traditional medicine industry is growing quite rapidly. This is also balanced by increasing consumer awareness of quality and environmentally friendly production processes so that companies are also required to increase competitiveness, explore regional potential, and create quality traditional medicinal products (Christian, 2017). Environmental issues can be used by companies to provide added value to their products (Hasan et al., 2023; Burhan et al., 2021; Shubham et al., 2018; Chesbrough, 2018). This market demand can be captured by the industry in Madura as a new opportunity to create value for

traditional medicinal products by incorporating green concepts into the production process so that it is hoped that it can be used as an advantage in free market competition and fulfill applicable laws and regulations.

Many companies in the world today have incorporated the concept of green business (Taib et al., 2015). There are three reasons for manufacturers to engage in green business, namely social responsibility and external motivation towards customers and government pressure or stakeholder pressure. However, most companies have incentives to implement green businesses which are mainly driven by competitiveness and cost issues, not just social responsibility (Ashton et al., 2017). Apart from the environmental impact, green business practices are very significant both economically and socially. It affects the business with all sustainable profits, and all business factors such as decision-making organization, risk management, stakeholder influence, marketing and communication (Nkonoki, E., & Ericsson, H., 2010). Nowadays, many commercial organizations ensure green strategies, stand in green business practices, and build different green business frameworks to achieve different benefits through sustainability (Burhan et al., 2021; Paul et al., 2014).

The development of the GBVC model can be used as an alternative for developing methods and techniques for post-harvest handling of local Madurese spice and medicinal plants. Post-harvest handling aims to ensure the availability of quality raw materials for spice and medicinal plants in sufficient and sustainable quantities. GBVC implementation starts from cultivation, harvesting, sorting, chopping, drying, processing, packaging and distribution.

The development of the Madurese spice and traditional medicine industry is faced with several problems, including (i). the quality of raw materials for spices and medicinal plants is not uniform due to the lack of implementation of good agricultural practices; (ii). Madurese traditional medicine products are faced with standardization of quality, safety and quality set by BPOM and WHO; (iii). the existence of quality parameters for traditional medicines that refer to PerBPOM No. 32 of 2019 concerning the Safety and Quality of Traditional Medicines; (v). marketing and distribution; (vi). Production processes that depend on traditional knowledge and local wisdom developed by local communities; (vii). excessive use

of chemicals or processing practices that are not environmentally friendly, which can damage ecosystems and natural resources; (viii). competition with traditional medicinal products both from large companies and imported products, and (ix). The production process is not by good manufacturing practice (GMP).

As industry develops, environmental problems increase (Burhan et al., 2021). Demands from stakeholders regarding this issue are also increasing. The traditional medicine industry also still uses chemicals that produce waste (Burhan et al., 2021; Bhanot et al., 2017). Several researchers offer the Green Business Value Chain (GBVC) concept to address environmental problems. GBVC is a concept that refers to efforts to incorporate sustainable and environmentally friendly practices into all stages or aspects of a business value chain. The business value chain includes all the steps involved in creating, producing, and delivering products or services to customers (Andriyani et al., 2018; Burhan et al., 2021;).

The Madurese spice and traditional medicine agroindustry involve farmers as suppliers of raw materials, companies providing auxiliary and packaging materials, marketing institutions, financing institutions, consumers and the government. Every activity carried out by spice and traditional medicine agroindustry players has a risk of uncertainty which can affect the flow of raw materials, information flow and financial flow in the supply chain system (Burhan et al., 2021; Nkonoki et al., 2010; Andriyani et al. ., 2018). Some of the risks in GBVC include product risk, market risk, price risk, technology risk, partnership risk, supplier failure, management policy failure, and key customer failure (Ashton et al., 2018; Zo et al., 2021; Mangla et al. ., 2015). To implement or maintain GBVC that produces goods and services responsibly and sustainably, companies must use tools that enable efficient identification, quantification and mitigation of existing risks (Zo et al., 2021; Lin, K., Tseng, M., & Pai, P., 2018).

Research on Green Supply Chain Management (GSCM) and Green Business Value Chain (GBVC) has been conducted by several researchers (Al-Sheyadi et al., 2019; Behzadi, G., 2018; Groening, C., & Zhu, Q., 2019), but there has not been much-applied research on the implementation of GBVC in small businesses. Likewise, there are not many studies that use a clear measurement matrix regarding the level of implementation of GSCM (Pramestri et al., 2021) and

GBVC in the traditional medicine industry. The measurement matrix is built from several dimensions, including internal management, green design, green purchasing, green production, green logistics, and lovers logistics (Kane, A., Nagar, J. 2012). With this matrix, companies can find out the extent of GBVC implementation from each dimension and also each measurement item (Kane, A., Nagar, J. 2012).

Based on the background above, this research aims to build a measurement matrix for the level of implementation of GBVC in the Madurese spice and traditional medicine agro-industry.

RESEARCH METHOD

This research was conducted in four districts in Madura, namely Bangkalan, Sampang, Pamekasan and Sumenep. The main objects of this research are 23 MSMEs that carry out business activities in processing traditional Madurese spices and medicinal plants.

The analysis stages in this research are as follows:

A. Analysis of GBVC

Implementation In this stage, the researcher collected information about GBVC theory from various literature, and then identified GBVC practices in traditional spice and medicinal plant processing businesses in Madura. Researchers combine respondent activities into a measurement.

B. Determine the GBVC

Dimensions At this stage, the researcher collects the dimensions in several literature into the GBVC model based on and describes the activities carried out by respondents based on the dimensions that have been determined.

C. Identify Sub-Dimensions and Determine Measurement Items

Sub-dimensions and Measurement Items are taken from measurements of GBVC practice implementation and grouped into each dimension based on activities in the GBVC model.

D. Create a GBVC matrix

Model The GBVC matrix is created based on measurement items that have been defined in each dimension.

E. Validation of the matrix by experts.

The GBVC matrix validation stage was carried out by several experts from academia, the Cooperatives and MSMEs Service, and the Agriculture and Food Security Service. Validation is carried out to determine whether the GBVC model used is appropriate and relevant to existing theory and includes the implementation of the GBVC dimensions.

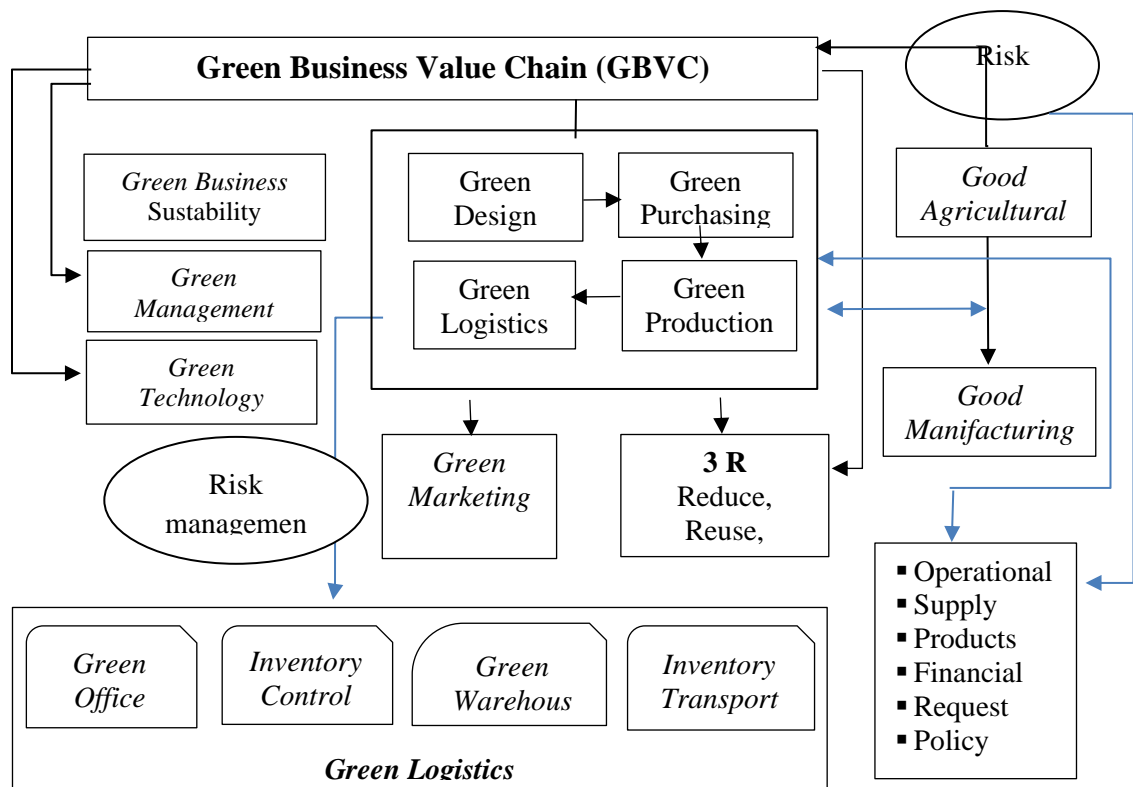
TABLE 1. RESEARCH RESPONDENTS

| Kabupaten | Nama UMKM |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bangkalan | UD. Almansyurien Jamu Tresna Jamu Sehat Alfiah Sari Dewi Jamu Ribkah Maryam Jokotole Jamu Hitam Jamu Fajar Jaya Firdaus Potre Madura Sumber Madu |
| Sampang | kelompok Jamu Putri Pahlawan kelompok Jamu Putri Mutiara Madura Sari Madura Ayu |
| Pamekasan | Karya Ibu Abdullah NY. Sumiati Janor Koneng Mustika Madura |
| Sumenep | CV. Pusaka Madura Keraton Kelompok Tani Nurul Jannah Lanang Kelompok Cabe Jamu Bluto |

ANALYSIS AND DISCUSSION

A. Implementation of GBVC in the Madurese Spice and Traditional Medicine Agroindustry

Green Business Value Chain (GBVC) is a green business concept built by integrating green business and sustainability models (Bergquist, A.-K., 2017), green supply chain management (Zou et al., 2021; Al-Sheyadi et al. , 2019; Lin, et al., 2019), and green management (Mustapha et al., 2017).



**Figure 1. Green Business Value Chain (GBVC) Framework
In the Madurese Spice and Traditional Medicine Agroindustry**

GBVC also applies the concepts of green accounting and finance (Linnenluecke, et al., 2016), green marketing (Chan, E.S.W., 2013), green information systems (Raisinghani, M.S., Idemudia, E.C., 2019), green technology (Taib et al., 2015), 3R (reduce, reuse, recycle), and others (Bergquist, A.K., 2017). The GBVC framework for the Madurese spice and traditional medicine agro-industry is presented in Figure 1.

Implementing Green Business Value Chain practices in the Madurese spice and traditional medicine agro-industry can involve a series of steps to reduce

environmental impacts, increase resource efficiency, and create sustainable added value. The following are several practices that can be implemented by respondents, including: 1). Selection and procurement of raw materials originating from sustainably managed resources; 2). environmentally friendly solid waste management. This is done by using product packaging materials that can be recycled; 3). use of environmentally friendly production methods, such as energy-efficient production technology and minimal waste emissions; 4). optimizing solar power for the raw material drying process; 5). increasing process efficiency in the entire value chain, including production, distribution and storage processes. This can help reduce resource consumption and carbon emissions; 6). organic farming practices for traditional Madurese spices and medicinal plants; 7). use of environmentally friendly packaging, such as recycled packaging or packaging materials that can be decomposed naturally; 8). build partnerships with suppliers who also implement sustainable practices.

By implementing GBVC practices, the Madurese spice and traditional medicine agro-industry is expected to reduce their environmental impact, increase competitiveness, and make a positive contribution to the sustainability of the ecosystem in Madura.

B. GBVC Dimensions, Sub-Dimensions, and Measurement Items

Dimensions, Sub-Dimensions, and Measurement Items of GBVC in the Madurese spice and traditional medicine agro-industry are presented in table 2.

TABLE 2. DIMENSIONS, SUB DIMENSIONS, AND MEASUREMENTS OF GBVC ITEMS IN MADURA'S SPICE AND TRADITIONAL MEDICINE AGROINDUSTRY

| Dimensions | Sub Dimensions | Measurement Items |
|---------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal Management | Performance evaluation system | <ul style="list-style-type: none"> ▪ The internal performance evaluation system includes environmental factors and the presence of pollution prevention programs ▪ Follow environmental regulations ▪ raining to employees on the concept of GBVC |
| | quality | <ul style="list-style-type: none"> ▪ TQEM (Total Quality Environmental Management) ▪ ISO certification |
| Green Design | Eco-design | <ul style="list-style-type: none"> ▪ Design products to avoid or reduce the use of hazardous products ▪ Product design for reuse, recycling, recovery of materials and component materials ▪ Product design to reduce material/energy consumption |
| | Customer Collaboration | <ul style="list-style-type: none"> ▪ Cooperation with customers for eco-design ▪ Collaboration with customers for cleaner production ▪ Collaboration with customers for green packaging |
| Green Purchasing | Supplier Selection | <ul style="list-style-type: none"> ▪ Collaboration with suppliers for environmentally friendly purposes ▪ Select suppliers using environmental criteria ▪ Supplier internal management audits |
| | 3R's in Procurement Process | <ul style="list-style-type: none"> ▪ Assessment based on the 3R's in Procurement Process (3RP) quality management system ▪ Reusing or recycling paper, |
| Green Production | Lean Production | <ul style="list-style-type: none"> ▪ Use of multifunctional teams ▪ Continuous improvement ▪ Eliminate zero-valued activities |
| | Cleaner Production | <ul style="list-style-type: none"> ▪ Using cleaner technological processes to save energy, water and waste ▪ Using environmental-based criteria in considerations or decision making ▪ Collaborate with clients to reduce the environmental impact of operations |
| Green Logistics | Green Transportation | <ul style="list-style-type: none"> ▪ Use of vehicles with alternative fuels ▪ Encourage eco-driving to reduce fuel consumption ▪ Environmentally friendly distribution |

| | |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green Packaging | <ul style="list-style-type: none"> ▪ Collaborate with suppliers to standardize packaging. Minimize the use of materials in packaging. Implement a returnable packaging system |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Source: Processed Primary Data, 2023

F. GBVC Matrix Measurement

The GBVC matrix measurement uses five levels, as presented in the following table

TABLE 3. IMPLEMENTATION LEVEL VALUE FOR EACH DIMENSION

| Average value | Implementation Level |
|---------------|--------------------------------|
| 0,1-1,0 | 1 (not considering) |
| 1,0-2,0 | 2 (planning to consider) |
| 2,1-3,0 | 3 (considering it currently) |
| 3,1-4,0 | 4 (initiating implementation) |
| 4,1-5,0 | 5 (implementing successfully) |

Source: Pramesi et al., 2020

The GBVC implementation matrix consists of five levels, which aim to determine the extent of GBVC implementation based on its dimensions and the measurement items being measured. The general measurement at level 1 is not considered, meaning that the Madurese agro-industry of spices and traditional medicinal plants has not or is not considering implementing it. Level 2 is planning to consider, meaning that the Madurese agro-industry of spices and traditional medicinal plants is planning to consider it, but still for a long period. Level 3 is considering it currently, meaning that the Madurese agro-industry of traditional spices and medicinal plants is considering it now and will implement it shortly. Level 4 is initiating implementation, meaning that the Madurese agro-industry of traditional spices and medicinal plants is starting to implement it, but only in some aspects or the implementation is not yet structured. Meanwhile, level 5 was implemented successfully, meaning that the Madurese agro-industry of traditional spices and medicinal plants has implemented the GBVC model successfully.

TABLE 3. AVERAGE VALUE OF IMPLEMENTATION LEVEL OF EACH DIMENSION AND SUB-DIMENSION IN THE AGROINDUSTRY OF MADURA'S SPICES AND TRADITIONAL MEDICINAL PLANTS

| Dimensions | Sub Dimension | Average | Mean Measurement Items |
|---------------------|-------------------------------|----------------|-------------------------------|
| Internal Management | Performance evaluation system | 2,7 | 2,0 |
| | Quality | 1,0 | |
| Green Design | Eco-design | 3,0 | 3,3 |
| | Customer Collaboration | 3,7 | |
| Green Purchasing | Supplier Selection | 2,0 | 2,0 |
| | 3R's in Procurement Process | 2,0 | |
| Green Production | Lean Production | 2,0 | 2,7 |
| | Cleaner Production | 3,3 | |
| Green Logistics | Green Transportation | 2,0 | 2,8 |
| | Green Packaging | 4,0 | |

Source: Processed Primary Data, 2023

The average value of GBVC implementation measurement items in the Madurese traditional spice and medicinal plant agro-industry is presented in radar form as in Figure 2. Calculating the average in each dimension is done by adding up the values of the measurement items or scores in each dimension, and dividing it by the number. measurement items on these dimensions (Pramesi et al., 2020).

Based on Table 2 and Figure 2 above, it can be seen that the green design dimension is the dimension that obtained the highest average value, namely 3.3, which is at the implementation level in the initiating implementation category, meaning that the Madurese spice and traditional medicinal plant agro-industry is starting to implement the GBVC model, but only in some aspects. or its implementation has not been structured. As for the other dimensions at the implementation level in the considering it current category, this means that the Madurese spice and traditional medicinal plant agro-industry is considering the current GBVC model and will implement it shortly.

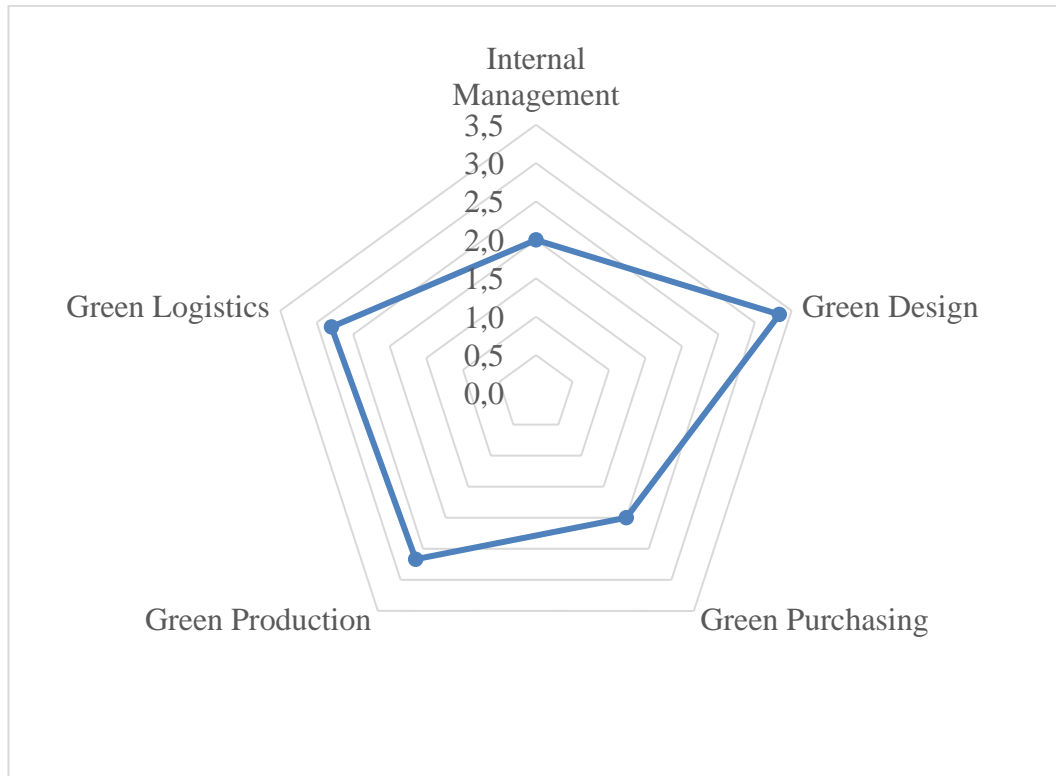


Figure 2. GBVC Evaluation Radadar Diagram Based on Average Measurement Items for Each Dimension in the Madurese Traditional Spice and Medicinal Plant Agroindustry

CONCLUSION

The conclusion of this article is as follows:

1. The Madurese traditional spice and medicinal plant agroindustry apply five GBVC dimensions, namely Internal Management, Green Design, Green Purchasing, Green Production and Green Logistics.
2. The matrix for measuring the level of GBVC implementation in the Madurese spice and traditional medicine agro-industry consists of 27 Measurement Items. The green design dimension is the dimension that is at the highest level of implementation of the GBVC model and is included in the initiating implementation category, while the other dimensions are at the implementation level considering it currently.
3. Dimensions and Measurement Items GBVC agro-industry of traditional Madurese spices and medicinal plants has received validation from experts.

BIBLIOGRAPHY

- Al-Sheyadi, A., Muyldermans, L., & Kauppi, K. (2019). The complementarity of green supply chain management practices and the impact on environmental performance. *Journal of Environmental Management*, 242, 186–198.
- Andriyani, D., Nurleli, N., & Lestari, R. (2018). “Pengaruh Analisis Rantai Nilai (value chain Analysis) terhadap Keunggulan Kompetitif”. ISSN: 2302-8556 *E-Jurnal akuntansi universitas udayana*, 16(2);1063-1090.
- Ashton, W., Russell, S., Futch, E. (2017). The adoption of green business practices among small US Midwestern manufacturing enterprises. *J. Environ. Plan. Manag* 60, 2133–2149. <http://dx.doi.org/10.1080/09640568.2017.1281107>
- Behzadi, G. (2018). Agribusiness supply chain risk management: A review of quantitative decision models. *Omega*, 79, 21–42
- Bergquist, A.-K. (2017). Business and Sustainability: New Business History Perspectives. Working Paper 18-034. pp. 10.2139/ssrn.3055587.
- Bhanot, N.; Rao, P.V.; Deshmukh, S. An integrated approach for analysing the enablers and barriers of sustainable manufacturing. *J. Clean. Prod.* 2017, 142, 4412–4439. [CrossRef]
- Burhan, Ciptomulyo, U., Singgih, ML., Baihaqi, I., Sustainable Business Model Innovations in the Value Uncaptured Manufacturing Industry: Fitting Gains—Gain Creators. *Sustainability* 2021, 13, 5647. <https://doi.org/10.3390/su13105647>.
- Chan, E.S.W. (2013). Managing green marketing: Hong Kong hotel managers' perspective. *Int. J. Hosp. Manag.* 34, 442–461. <http://dx.doi.org/10.1016/j.ijhm.2012.12.007>.
- Chesbrough, H.; Lettl, C.; Ritter, T. Value Creation and Value Capture in Open Innovation. *J. Prod. Innov. Manag.* 2018, 35, 930–938. [CrossRef]
- Christian Ketels (2017), Cluster Mapping as Tool for Development, Havard Business School, http://www.hbs.edu/faculty/Publication%20Files/Cluster%20Mapping%20as%20a%20Tool%20for%20Development%20_%20report_ISC%20WP%20version%2010-10-17_c46d2cf1-41ed43c0-bfd8-932957a4ceda.pdf
- Groening, C., & Zhu, Q. (2019). Consumers' role in the green supply chain. In *Handbook on the sustainable supply chain*, Cheltenham, UK: Edward Elgar Publishing
- Hasan, MDM., Nekmahmud, MD., Yajuan, L., Patwary, MA., Green business value chain: a systematic review. *Sustainable Production and Consumption* 20; 326-339. <http://www.elsevier.com/locate/spc> <https://doi.org/10.1016/j.spc.2019.08.003>. Diunduh pada tanggal 16 Mei 2023.
- Kane, A., Nagar, J. (2012). Determining the number of clusters for a k-means clustering algorithm. *Indian Journal of Computer Science and Engineering (IJCSE)*, 3(5), 670–672. <https://www.ijcse.com/docs/INDJCSE12-03-05-080.pdf>
- Lin, K., Tseng, M., & Pai, P. (2018). Sustainable supply chain management using approximate fuzzy DEMATEL method. *Resources, Conservation and Recycling*, 128, 134–142.

- Linnenluecke, M.K., Smith, T., McKnight, B., 2016. Environmental finance: A research agenda for interdisciplinary finance research. *Econ. Model* 59, 124–130. <http://dx.doi.org/10.1016/j.econmod.2016.07.010>.
- Mangla, S. K., Kumar, P., & Barua, M. K. (2015). *Risk analysis in green supply chain using fuzzy AHP approach: A case study. Resources, Conservation and Recycling, 104*, 375–390. doi:10.1016/j.resconrec.2015.01.
- Mustapha, M.A., Manan, Z.A., Wan Alwi, S.R. (2017). Sustainable green management system (SGMS) – An integrated approach towards organisational sustainability. *J. Clean. Prod.* 146, 158–172. <http://dx.doi.org/10.1016/j.jclepro.2016.06.033>.
- Nkonoki, E., Ericsson, H. (2010). What are the Factors Limiting the Success and/or Growth of Small Businesses in Tanzania? – an Empirical Study on Small Business Growth. Arcada University of Applied Sciences.
- Paul, I.D., Bhole, G.P., Chaudhari, J.R. (2014). A review on green manufacturing: It's important. Methodology and its Application. *Procedia Mater. Sci* 6, 1644–1649. <http://dx.doi.org/10.1016/j.mspro.2014.07.149>
- Pramestri, RI., Baihaqi, I., & Bramanti, GW. (2021). Membangun Green Supply Chain Management (GSCM) Scorecard. *Jurnal Teknik ITS*, 9(2) 2337-3539;2301-9271.
- Raisinghani, M.S., Idemudia, E.C., 2019. Green information systems for sustainability. In: *Green Business*. IGI Global, pp. 565–579. <http://dx.doi.org/10.4018/978-1-5225-7915-1.ch028>.
- Shubham, S.; Charan, P.; Murty, L.S. Organizational Adoption of Sustainable Manufacturing Practices in India: Integrating Institutional Theory and Corporate Environmental Responsibility Organizational Adoption of Sustainable Manufacturing Practices. *Int. J. Sustain. Dev. World Ecol.* 2018, 25, 23–34. (CrossRef)
- Taib, M.Y.M., Udin, Z.M., Ghani, A.H.A. (2015). The collaboration of green design & technology towards business sustainability in Malaysian manufacturing industry. *Procedia - Soc. Behav. Sci.* 211, 237–242. <http://dx.doi.org/10.1016/j.sbspro.2015.11.029>
- Taib, M.Y.M., Udin, Z.M., Ghani, A.H.A. (2015). The collaboration of green design & technology towards business sustainability in Malaysian manufacturing industry. *Procedia - Soc. Behav. Sci.* 211, 237–242. <http://dx.doi.org/10.1016/j.sbspro.2015.11.029>.
- Zou, Z., Farnoosh, A., & McNamara, T. (2021). *Risk analysis in the management of a green supply chain. Strategic Change, 30(1)*, 5–17. doi:10.1002/jsc.2383