



Data Analytics and Artificial Intelligence

Vol: 1(2), 2021

REST Publisher

ISBN: 978-81-948459-4-2

Website: <http://restpublisher.com/book-series/data-analytics-and-artificial-intelligence>

Establishment of Green Supplier Evaluation and Environmental Sustainability

Vinod Israni

SSt College of Arts and Commerce, Maharashtra, India.

Email: vinodisrani@sstcollege.edu.in

Abstract

The Environmental criteria should be considered In addition to traditional criteria such as price, quality and delivery time. Evaluating Green Supplier Development Initiatives Recently developed here; we have reviewed some of the import studies to find out how to improve green supplier development. Indexes based on environment, depletion of raw materials, increasing pollution and environmental degradation. Broad relaxation of quantitative and qualitative criteria for measuring supplier product quality is typical of increasing global trends in policies and practices. Improving the management companies Substitution under scarcity is used to create green supplier improvement program rankings to specify quantitative information for evaluations of selected criteria. The integration and management authors develop an expanded perspective on ecosystem dynamics that can serve as a guide is context at the analytical level of dimensional process and progress improvement are found in areas such as environmental management maturity and environmental content, the relationship between production strategy, distribution, supply chain management and technology management, and quality.

Keywords: green supplier evaluation, Green Supplier Development, green supply chain management, Green supplier, Environmental Sustainability.

Introduction

Especially green supplier evaluation Candidate entities with specific numerical values are difficult evaluate ambiguity. uncertainty of input data and especially rational ambiguity, decision makers select candidate firms with specific numerical values, as many researchers assert, decision makers are not specific, they are based on the evaluation values of candidate firms Implicit interpretation means consistent ambiguity or inconsistency of information. However, the cloud model is characterized by the ambiguity of terms and not only describes the discrepancy, but also makes it very easy and flexible to switch between quantitative values and qualitative concepts. In a green environment supplier selection, Nielsen reviews the relevant documents and identifies the most popular and the wider environment criteria in the Identified activities, such as environmental planning measures and regulations for waste and energy, due to the flexibility of the identified environmental management systems Production and standards are adopted by many companies as procedures. Based on the above discussions, this paper proposes Criterion Weighting, a methodology for evaluating qualified green suppliers in a linguistic context manufacturing company, and suggests various alternative suppliers that improve efficiency and collaboration. Nature of Related Light Green supplier selection, cloud model theory and methodology are related to cloud model theory. In recent years, corporate competitiveness and rapid delivery have become relevant in the supply chain, and how to select suppliers has become a system an important company's Key environmental challenges are of primary importance to a company's capacity and its suppliers. Key environmental challenges are paramount to a company's capability and its suppliers are critical. Supply chain management, environment for environmental management aspect of companies, global warming needs more attention. In addition, pressure from other sources, demanded by public organizations, corporate environmental awareness plays an important role as a supplier selection criterion. Process development, design, manufacturing, product development, supplier selection includes process design, structures, logistics, marketing, regulatory compliance, increased efficiency and waste management. Image and reflect a reputation for flexibility and environmental impact.

Green supplier evaluation

The environment in the evaluation of suppliers, environmental criteria should be considered assessment trend has been studied by many researchers, and the literature has evolved in recent years, we have reviewed some important studies in this area This trend in supplier evaluation has been large literature has developed. The remainder study is arranged in the following order In the second section, this study reviews existing literature on tire recycling and evaluation and classification green suppliers examines Applicability and efficiency of the proposed method. In final section, we present the discussion and conclusions on the supplier selection model. On the other hand, it is difficult to evaluate specific Firms supplier. Evaluation green activities Input data and especially man thought. As emphasized By many researchers, decision makers are linguistic expressions, imprecise especially human thought As emphasized by many researchers, decision makers It is important to change to quantitative and current methods based on linguistic expressions, judgments based on imprecise and unquantifiable

information, and linguistic variables Green supplier selection issues in real life. Dealing linguistic information is a specific ethnographic term.

Green Supplier Development

Environmental performance assessment of suppliers is the first step towards green supplier development, and there is very little research on green supplier development in the literature. A regression model was introduced to examine the relationships using approximate set theory. They evaluated legal counter-theoretical perspectives using a gray-based method formalized by telecommunications system provider. Green Supplier Improvement Performance and Top Management Results in Company Performance Through these supplier environmental monitoring programs for preferred manufacturers of leading manufacturers of pivot irrigation equipment in China, companies develop other supplier programs. It proposes a selection process for engaging in green supplier development projects that improve suppliers' environmental performance and practices but do not identify suppliers' weak areas. Assessment assessments, major environmental performance companies are undertaking their support providers. Identified Weakness The development of formal tools and models in projects to improve supplier performance is very limited. These models include training, information and technology sharing in such development practices. Formal supplier development programs for supplier performance improvement in identified weak environmental areas have little to do with developing formal tools and models. These are samples suggested through literature. Assist in supplier development and management. Supplier ecosystem tools and ecosystem supplier development models help companies manage higher performance. Therefore, systematic method that uses approximate help assesses firms and organizations.

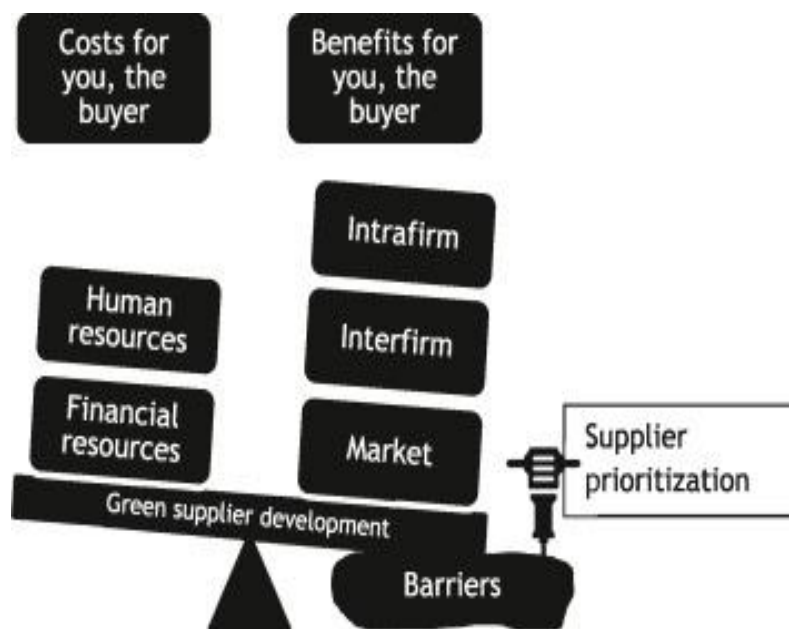


Figure 1 Green Supplier Development

Green supply chain management

Currently, companies, especially in developing countries, need A Green supply chain to improve effectiveness On the one hand, management measures to survive in the global market, continue to issue environmental regulatory materials, increasing pollution and environmental degradation. In addition, companies are more aware of the various pressures from consumers and the adverse effects of their business and operations on the environment. Distribution is an approach to management philosophy, Extraction and manufacturing Processes, product transportation and final disposal life of the product. Adopt reduce or eliminating the impacts of their business activities. The environmental dimension has recently been included in purchasing processes, the development of environmental management systems and the negative impacts of products on the environment have made consumers more environmentally conscious It affects organizations through decision-making Many buyers own their own, and they expect good from the supplier Another is the directive aimed at creating awareness about the design of personal electronic products that limit hazardous substances to environmental impact assessment and the ozone layer. Causes of Hazardous Chemicals Guidelines used to reduce and stop the production of electronic products containing toxic and harmful substances. The directive aims to protect the environment and human health. Compliance with the directive creates a strong green image for the company and attracts suppliers. Certification is required as part of the identification of "environmental aspects" of the International Organization for Standardization. Goals are achieved. After completion, feature related discrepancies are accurately determined and targets are met After completion, feature-related discrepancies are accurately determined, policies, procedures, goals, and objectives are re-evaluated for continuous improvement The identification of "ecological features" in the International Organization for Standardization should be the basic certification. The company went beyond these features to address "environmental impacts." Creating a plan for it It

includes goals, objectives and actions to be taken. Progress and goals are achieved. All policies, regulations, goals and objectives are re-evaluated for continuous improvement. With the advent of industrialization, Green supply chain management means more value for members.



Figure 2 Green supply chain management

The entire supply chain is defined as a strategy to achieve. Today's Competitive Markets Supply Chains Green Supplier Selection Examined Some efforts to provide green supplier selection practices closer to traditional practices for the electricity industry have been carried out. In this context, many scholars have sought to identify and weigh appropriate measures, and their application is challenging. Evaluating and evaluating suppliers effectively and efficiently.

Green supplier

Green supplier evaluation studies have made many contributions to green suppliers since Chen proposed an evaluation framework that uses an obscure green supplier, Six Sigma standard index as an evaluation criterion, and then proposed a mixed approach to measure supplier product quality using a ranking system. Green's evaluation of a company in Ankara Based on a green supplier selection model on supplier performance in electronics manufacturing, using their location as the best, method of how to select green suppliers, there are some academic articles that discuss Green Scale Screening issues In most cases, criteria are chosen based on experts generation, Literature summary, or the Delphi method. But instead, the objective should be to provide research a new A decision-making framework for supplier includes useful Data processing techniques for selecting key criteria. In the first phase, we collected evaluation data a supplier from a Production company and to by selecting key was established, and proposed model for selecting key criteria included effective data mining techniques. In the first step, we collected assessment data a supplier from an electronics Production company, established initial training model, and used it to select key criteria. When analyzing Studies related to green supplier selection, the tables typically show Pollution/waste control, green manufacturing, Delivery, green capabilities, Reverse logistics, green packaging, green design or other selection criteria, and green supplier replacement criteria. Considered the human decision-making process groups is inherently ambiguous and imprecise A source text is needed for more additional translation information about this source text, as The green supplier selection process involves uncertainty and subjectivity in developing criteria. Based on the above discussions, this paper also proposes is a methodology for evaluating competent green suppliers Context. Major contributions of this study first summarized, and a cloud model is introduced. Second, we develop an optimization model derive criterion weights to deal with the ambiguity and the inconsistency Linguistic expressions given by decision makers. Be completely unknown or completely unknown Third, extended ones mechanism is Developed to prioritize performance various change providers We suggest better collaboration and for an automobile manufacturing company is indicated through a related example. This paper is structured around a study of relevant Literature on green supplier selection. When analyzing Studies Regarding green supplier selection, commonly mentioned criteria can be found in the table, such As Pollution/waste control in manufacturing, green manufacturing, Delivery, green capabilities, Reverse logistics, green packaging, green design, or multiple criteria. Selection and decision making of green supplier substitution is commonly used in the literature. Decision-making with multiple criteria is considered a problem because the decision-making process of humans in groups is inherently ambiguous and imprecise. There is uncertainty and subjectivity.

Environmental Sustainability

Supplier Selection Criteria and Decision Making Samples have been created, and several literature reviews have been completed. Others have addressed possible trade-offs between these criteria in policies are increasing, with recent supplier evaluation studies relying, in general, on a wide A range of quantitative and qualitative criteria for selecting the most desirable alternatives given specific problem variables and constraints considered normal and environmental criteria address Green suppliers. The success of a green supply chain depends on the consistent and strong commitment of its stakeholders. In other words, if its suppliers do not implement green initiatives in their facilities, the impact of a company's green initiatives will be limited. Therefore, there is a need for an effective tool for ranking Suppliers based on their environmental performance. Potential reasons for environmental performance comparisons and differences were not identified. Given The multidimensional nature of the problem, classifying companies into hierarchical environmental classes, a multi-criteria ranking system is also thought to be helpful In identifying differences in the environmental performance of classes and individual suppliers Categorizing suppliers means designing green supplier development plans Based on the needs of each class. A green supplier development program is more effective if designed keeping in mind Characteristics of each class A supplier Effective and successful green supplier development programs can crease suppliers' Environmental performance Based This thinking, It can be said An integrated multi-criteria decision making process system is needed to rank Suppliers based on their environmental performance. Create environmental performance assessment reports for each supplier class and supplier. This study presents a literature review considered Topics discuss the details of the proposed method, proposed industrial application method finally, conclusions and future research directions presented. The green supply management literature seeks Improve environmental performance through helping existing Suppliers obtain Introduce alternative Green practices, while are greening their supply chains, not all suppliers a position to improving their environmental or sustainability performance costs, quality and improvement Provision, institutions.

Conclusion

With the A large body of literature has recently developed some To identify criteria for evaluating green supplier development efforts, and we also reviewed import studies Enhancing Green Supplier Development Nowadays, companies, especially in developing countries, are living in the global market through green supply management activities to increase efficiency, the depletion of raw materials, increasing pollution and environmental degradation, as environmental regulations continue to be issued, A hybrid approach to evaluating Green supplier performance electronic Production uses fuzzy evaluation The method of measuring supplier product quality as an evaluation criterion is common, increasing global trends in environmental sustainability policies and practices. The company went beyond these features to address "environmental impacts." Creating a plan for it It includes goals, objectives and actions to be taken. Progress and goals are achieved. All policies, regulations, goals and objectives are re-evaluated for continuous improvement. With the advent of industrialization, Green supply chain management means more value for members. . Create environmental performance assessment reports for each supplier class and supplier. This study presents a literature review considered Topics discuss the details of the proposed method, proposed industrial application method finally, conclusions and future research directions presented.

Reference

1. Wang, Ke-Qin, Hu-Chen Liu, Liping Liu, and Jia Huang. "Green supplier evaluation and selection using cloud model theory and the QUALIFLEX method." *Sustainability* 9, no. 5 (2017): 688.
2. Gurel, Ozlem, A. Zafer Acar, Ismail Onden, and Islam Gumus. "Determinants of the green supplier selection." *Procedia-Social and Behavioral Sciences* 181 (2015): 131-139.
3. Sahu, Nitin Kumar, Saurav Datta, and Siba Sankar Mahapatra. "Green supplier appraisalment in fuzzy environment." *Benchmarking: An International Journal* (2014).
4. Galankashi, Masoud Rahiminezhad, Ali Chegeni, Amin Soleimanyanadegany, Ashkan Memari, Ali Anjomshoe, Syed Ahmad Helmi, and Ahmad Dargi. "Prioritizing green supplier selection criteria using fuzzy analytical network process." *Procedia Cirp* 26 (2015): 689-694.
5. Hashemi, Seyed Hamid, Amir Karimi, and Madjid Tavana. "An integrated green supplier selection approach with analytic network process and improved Grey relational analysis." *International Journal of Production Economics* 159 (2015): 178-191.
6. Wątróbski, Jarosław, and Wojciech Sałabun. "Green supplier selection framework based on multi-criteria decision-analysis approach." In *International Conference on Sustainable Design and Manufacturing*, pp. 361-371. Springer, Cham, 2016.
7. Segura, Marina, Concepción Maroto, Baldomero Segura, and José Carlos Casas-Rosal. "Improving food supply chain management by a sustainable approach to supplier evaluation." *Mathematics* 8, no. 11 (2020): 1952.
8. Fu, Xiaoyong, Qinghua Zhu, and Joseph Sarkis. "Evaluating green supplier development programs at a telecommunications systems provider." *International Journal of Production Economics* 140, no. 1 (2012): 357-367.
9. Awasthi, Anjali, and Govindan Kannan. "Green supplier development program selection using NGT and VIKOR under fuzzy environment." *Computers & Industrial Engineering* 91 (2016): 100-108.

10. Akman, Gülşen. "Evaluating suppliers to include green supplier development programs via fuzzy c-means and VIKOR methods." *Computers & industrial engineering* 86 (2015): 69-82.
11. Bai, Chunguang, and Joseph Sarkis. "Green supplier development: analytical evaluation using rough set theory." *Journal of cleaner production* 18, no. 12 (2010): 1200-1210.
12. Bai, Chunguang, Kannan Govindan, Ahmet Satir, and Hong Yan. "A novel fuzzy reference-neighborhood rough set approach for green supplier development practices." *Annals of Operations Research* (2019): 1-35.
13. Govindan, Kannan, Sivakumar Rajendran, Joseph Sarkis, and Parasurama Murugesan. "Multi criteria decision making approaches for green supplier evaluation and selection: a literature review." *Journal of cleaner production* 98 (2015): 66-83.
14. Guo, Zhaoxia, Haitao Liu, Dongqing Zhang, and Jing Yang. "Green supplier evaluation and selection in apparel manufacturing using a fuzzy multi-criteria decision-making approach." *Sustainability* 9, no. 4 (2017): 650.
15. Demir, Leyla, Muhammet Enes Akpınar, Ceyhun Araz, and Mehmet Ali İlgin. "A green supplier evaluation system based on a new multi-criteria sorting method: VIKORSORT." *Expert Systems with Applications* 114 (2018): 479-487.
16. Liou, James JH, Yen-Ching Chuang, Edmundas Kazimieras Zavadskas, and Gwo-Hshiung Tzeng. "Data-driven hybrid multiple attribute decision-making model for green supplier evaluation and performance improvement." *Journal of Cleaner Production* 241 (2019): 118321.
17. Xu, Xue-Guo, Hua Shi, Li-Jun Zhang, and Hu-Chen Liu. "Green supplier evaluation and selection with an extended MABAC method under the heterogeneous information environment." *Sustainability* 11, no. 23 (2019): 6616.
18. Van, Luu Huu, Vincent F. Yu, Luu Quoc Dat, Canh Chi Dung, Shuo-Yan Chou, and Nguyen Viet Loc. "New integrated quality function deployment approach based on interval neutrosophic set for green supplier evaluation and selection." *Sustainability* 10, no. 3 (2018): 838.
19. Gitinavard, Hossein, Hamid Ghaderi, and Mir Saman Pishvae. "Green supplier evaluation in manufacturing systems: a novel interval-valued hesitant fuzzy group outranking approach." *Soft Computing* 22, no. 19 (2018): 6441-6460.
20. Tavana, Madjid, Akram Shaabani, Francisco J. Santos-Arteaga, and Naser Valaei. "An integrated fuzzy sustainable supplier evaluation and selection framework for green supply chains in reverse logistics." *Environmental Science and Pollution Research* 28, no. 38 (2021): 53953-53982.
21. Segura, Marina, Concepción Maroto, Baldomero Segura, and José Carlos Casas-Rosal. "Improving food supply chain management by a sustainable approach to supplier evaluation." *Mathematics* 8, no. 11 (2020): 1952.
22. Lee, Amy HI, He-Yau Kang, Chang-Fu Hsu, and Hsiao-Chu Hung. "A green supplier selection model for high-tech industry." *Expert systems with applications* 36, no. 4 (2009): 7917-7927.
23. Lee, Amy HI, He-Yau Kang, Chang-Fu Hsu, and Hsiao-Chu Hung. "A green supplier selection model for high-tech industry." *Expert systems with applications* 36, no. 4 (2009): 7917-7927.
24. Çifçi, Gizem, and Gülçin Büyükoçkan. "A fuzzy MCDM approach to evaluate green suppliers." *International Journal of Computational Intelligence Systems* 4, no. 5 (2011): 894-909.
25. Banaeian, Narges, Hossein Mobli, Behnam Fahimnia, Izabela Ewa Nielsen, and Mahmoud Omid. "Green supplier selection using fuzzy group decision making methods: A case study from the agri-food industry." *Computers & Operations Research* 89 (2018): 337-347.
26. Fallahpour, Alireza, Ezutah Udony Ologu, Siti Nurmaya Musa, Dariush Khezrimotlagh, and Kuan Yew Wong. "An integrated model for green supplier selection under fuzzy environment: application of data envelopment analysis and genetic programming approach." *Neural Computing and Applications* 27, no. 3 (2016): 707-725.
27. Fallahpour, Alireza, Ezutah Udony Ologu, Siti Nurmaya Musa, Dariush Khezrimotlagh, and Kuan Yew Wong. "An integrated model for green supplier selection under fuzzy environment: application of data envelopment analysis and genetic programming approach." *Neural Computing and Applications* 27, no. 3 (2016): 707-725.
28. Bakeshlou, Ehsan Afshar, Alireza Arshadi Khamseh, Mohammad Ali Goudarzian Asl, Javad Sadeghi, and Mostafa Abbaszadeh. "Evaluating a green supplier selection problem using a hybrid MODM algorithm." *Journal of Intelligent Manufacturing* 28, no. 4 (2017): 913-927.
29. Galankashi, Masoud Rahiminezhad, Ali Chegeni, Amin Soleimanyanadegany, Ashkan Memari, Ali Anjomshoae, Syed Ahmad Helmi, and Ahmad Dargi. "Prioritizing green supplier selection criteria using fuzzy analytical network process." *Procedia Cirp* 26 (2015): 689-694.
30. Chung, Chih-Chao, Li-Chung Chao, and Shi-Jer Lou. "The establishment of a green supplier selection and guidance mechanism with the ANP and IPA." *Sustainability* 8, no. 3 (2016): 259.