

# 10 Sustainable supply chains

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## **Introduction**

Considerations regarding the integration of sustainable development undertaken from the perspective of supply chain management are present in the academic literature (Hassini et al., 2012; Koberg & Longoni, 2019; Linton et al., 2007). Traditionally, supply chain management is defined as the management of physical, information, and financial flows in networks of intra- and inter-organisational relationships that together add value and achieve customer satisfaction (Mentzer, Dewitt, et al., 2001; Stock & Boyer, 2009). From a process perspective, it includes planning, procurement, production, and distribution logistics, but it does not focus solely on any one of these areas (Cooper et al., 1997).

Unlike the traditional supply chain, which usually focuses on economic and financial business performance, a sustainable supply chain is characterised by a clear integration of environmental or social goals that extend the economic dimension to the triple bottom line (Gold et al., 2013; Seuring & Müller, 2008a). The issue of implementing the principles of sustainable development into supply chain management has been widely discussed in recent years (Ahi & Searcy, 2013; Ansari & Kant, 2017; Baraniecka, 2015; Beske-Janssen, Johnson, & Schaltegger, 2015; Brandenburg, Gruchmann, & Oelze, 2019; de Oliveira, Espindola, da Silva, da Silva, & Rocha, 2018; Gimenez & Tachizawa, 2012; Marić & Opazo-Basáez, 2019; Urbaniak, 2018b). Managing supply chains in a sustainable manner is becoming a growing problem for companies of all sizes and operating in many industries. Meeting environmental and social standards at all stages of the supply chain ensures that (at least) a minimum level of sustainability is achieved. This more reactive approach to responding to external pressure from governments, consumers, and non-governmental organisations (NGOs) or the media (Seuring & Müller, 2008b) can be complemented by the development and introduction of sustainable products. This discussion focuses on closely related areas, such as sustainable, responsible, green, closed, or ethical chains, and the concepts are often used interchangeably (Ahi & Searcy, 2015; Gurtu et al., 2015). In the following, I will present and briefly discuss supply chains that respect the principles of sustainable development.

### **Sustainable supply chain**

We have been observing the interest of researchers in sustainable supply chains in the literature for some time (Ahi & Searcy, 2013; Ansari & Kant, 2017; Kumar & Bangwal, 2022; Touboulic & Walker, 2015). According to one of the more often cited definitions, sustainable supply chain management is:

the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements.

(Seuring & Müller, 2008a, p. 1700)

A sustainable supply chain transparently integrates an organisation's social, environmental, and economic goals through the systematic coordination of inter-organisational business processes to improve the long-term economic performance of the organisation, its supply chain and stakeholders (Carter & Rogers, 2008; Taticchi et al., 2013; Zimon et al., 2019). A feature of such a chain is the use of environmentally friendly resources to sustain its development in the long term (Golińska, 2014). Sustainable supplier selection and order allocation are core activities in sustainable supply chain management that can significantly impact a company's efficiency and impact profitability, flexibility, and even agility (Hendiani et al., 2020). According to Sisco et al. (2011), a sustainable supply chain means managing environmental, social, and economic impacts and encouraging good management practices throughout the life cycle of goods and services.

A sustainable supply chain allows you to achieve organisational goals through the use of innovative technologies (Kim et al., 2014), but the implementation of sustainable supply chain management also requires overcoming barriers (Yadav & Singh, 2020). The most important internal barriers include cost, lack of legitimacy, lack of commitment and support from top management, and lack of training; while external barriers include regulation, weak supplier involvement, resistance to the adoption of advanced technologies, financial constraints, and industry-specific barriers (Tseng et al., 2019; Walker et al., 2008).

### **Socially responsible supply chain**

A socially responsible supply chain refers to the concept of corporate social responsibility (CSR) and is defined as a union of its participants who jointly adapt, implement, and coordinate values, strategies, and tactics to combine all levels of social responsibility with business processes in the chain (Li et al., 2021; Vaaland & Owusu, 2012). The concept of corporate social responsibility

was incorporated into the supply chain by Carter and Jennings (2002) arguing that suppliers may be in a better competitive position due to the increased involvement of buyers in socially responsible activities. In turn, Carter and Rogers (2008) emphasise that the integration of environmental, social, and economic criteria in supply chain management allows an organisation to achieve long-term economic profitability.

The inclusion of CSR principles in supply chain management has gained importance in recent years, due to the negative effects on the organisation resulting from the socially irresponsible behaviour of its suppliers (Cole & Aitken, 2019; Sinkovics et al., 2016; Tang, 2018). Integrating CSR and supply chain management means taking into account such aspects as, among others: social issues as a priority during purchasing processes (Alghababsheh & Gallear, 2020; Miemczyk & Luzzini, 2019; Sancha et al., 2016); the impact of modern-day slavery and how organisations should deal with it in their supply chains (Bodendorf et al., 2022; Gold et al., 2015; New, 2015) and how ethical issues are dealt with in the context of the supply chain (Choi et al., 2022; Eltantawy et al., 2009; Shafiq et al., 2020). Thus, CSR in supply chains focuses on the development and implementation of practices that serve the main economic goals of the company, while taking into account legal, ethical, and discretionary obligations in the supply chains (Carroll, 2016).

### **Green supply chain**

In response to increasingly stringent environmental regulations and the need to meet them, supply chain partners are increasingly making decisions to cooperate (Chen et al., 2017; Somjai et al., 2020). The concept of a green supply chain reflects the joint efforts of manufacturers and supply chain partners to achieve common environmental goals (Yang et al., 2020). Green supply chain management focuses on inter-organisational interactions from the perspective of factors influencing economic performance and environmental aspects, such as the minimisation of greenhouse gas emissions, environmental waste, optimisation and use of resources, and reduction of waste resulting from its use (Sarkis et al., 2011; Tseng et al., 2019; Villanueva-Ponce et al., 2015). To obtain greater benefits from cooperation within the green supply chain, an environmental management company must effectively and efficiently manage its internal and external processes by building an inter-organisational team, sharing information, and jointly solving environmental problems (Aslam et al., 2018; Green et al., 2012; Wu, 2013). Companies are therefore adopting environmentally friendly supply chain practices as a priority for both environmental sustainability goals and financial performance (Hashmi & Akram, 2021; Ramanathan et al., 2014).

Green supply chain management covers all stages of production: product design, supplier selection, material resources, production process, product

packaging, product delivery to customers, and recycling (Witkowski & Pisarek, 2017). The green supply chain, which includes an inclusive philosophy of sourcing, production, distribution, and reverse logistics, aims to improve the sustainability and environmental performance of companies (Birou et al., 2019; Hashmi & Akram, 2021; Yildiz Çankaya & Sezen, 2019). According to Birasnav et al. (2022) there are external and internal practices that are followed in green supply chain management. External processes include (1) Supplier management and collaboration, (2) Customer collaboration, and (3) Community and NGO collaboration. The internal processes, on the other hand, include (1) Internal environmental management, (2) Green Logistics, (3) Green purchasing, (4) Green technology, (5) Green finance (investment recovery), and (6) Life cycle analysis and measurements. Therefore, the implementation of green supply chain practices requires the involvement of both organisations and stakeholders to achieve significant environmental goals.

### **Circular supply chain**

Circular Supply Chain Management integrates the concept of a circular economy with supply chain management. According to Farooque et al. (2019) circular supply chain management is the integration of circular thinking with supply chain management and the surrounding industrial and natural ecosystems. It systematically restores technical materials and regenerates biological materials toward a zero-waste vision through system-wide innovation in business models and supply chain functions from product/service design to end-of-life and waste management, involving all stakeholders in a product/service life-cycle, including parts/product manufacturers, service providers, consumers, and users (Farooque et al., 2019).

The purpose of these types of chains is to organise and coordinate organisational tasks such as production, marketing, information technology, finance, logistics, and customer service, within all entities and institutions involved in the supply chain, to minimise waste and emissions, through resources and circular management energy (González-Sánchez et al., 2020; Sun et al., 2020). These activities will result in improving operational efficiency and effectiveness and generating a competitive advantage (De Angelis et al., 2018; Geissdoerfer et al., 2018; Kühl et al., 2022). The development of circular supply chains depends on four dimensions: (1) greater strength in the relationships established in the supply chain, (2) adaptation of logistics and organisation, (3) disruptive and smart technologies, and (4) a functioning environment (González-Sánchez et al., 2020). Figure 10.1 shows the course of typical circular supply chain processes.

The circular supply chain includes the processes of the flow of materials and flow of returns as well as the accompanying information flows. The goal of manufacturers is to capture added value in the supply chain.

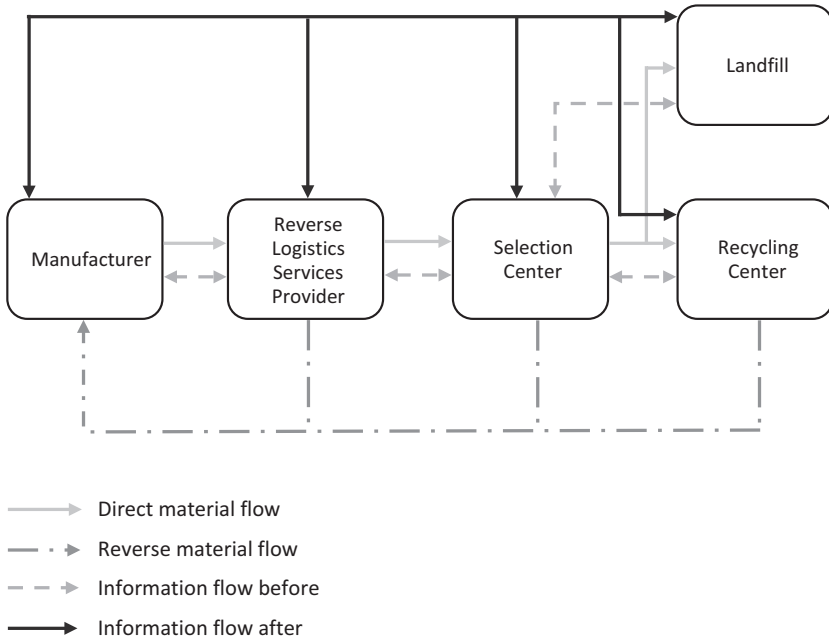


Figure 10.1 Circular supply chain reverse processes

Source: Own elaboration based on: (Centobelli et al., 2022).

### Closed-loop supply chains

The **closed-loop** supply chain integrates and coordinates the flow of goods both forward – from suppliers of raw materials for production to downstream entities (e.g., consumers); as well as managing the backflows from downstream suppliers to upstream suppliers (Kuvvetli & Erol, 2020). According to Guide and Van Wassenhove (2009) a closed-loop supply chain constitutes “the design, control, and operation of a system to maximize value creation over the entire life cycle of a product with the dynamic recovery of value from different types and volumes of returns over time” and also includes product return management, leasing, and remanufacturing (Govindan et al., 2020; Guide & Van Wassenhove, 2009; Niu et al., 2019).

The goal of closed-loop supply chains is to recover the value of products by reusing them, and improving or replacing some components so that the product obtained in this way is of the full value (Wang et al., 2018; Zu-Jun et al., 2016). This type of chain can be more cost-effective and energy-efficient than the traditional one, due to the reduction of waste and input materials and the improvement of the company’s social image (Bhatia et al., 2020).

Closed-loop supply chains consist of two parts – reverse chain and direct chain (forward). In the direct chain, the flow of products starts with the suppliers,

continues through the factory, and then distributors deliver the final products to customers to meet their requirements (Govindan et al., 2020; Malekinejad et al., 2022). The reverse chain starts with picking up the products used by end consumers and sending them down the supply chain (Govindan et al., 2020). Coordination of flows in the direct and return chain and placing them in parallel next to each other create a closed-loop supply chain. It includes direct reuse, repair, modernisation, and reproduction (Bhatia et al., 2022; S. Kumar & Yamakoka, 2007). Returns of products from consumers to producers or another party characterise the main difference with the classic supply chain, which focuses on the forward flows of goods (Brzeziński et al., 2021; De Giovanni & Zaccour, 2022; Katsoras & Georgiadis, 2022). A closed-loop supply chain thus effectively connects the conventional supply chain with reverse logistics.

## **Conclusions**

In the context of supply chains, issues such as environment, ethics, diversity, labour and human rights, fair trade, health and safety, and corporate philanthropy have been explored in different types of chains (Hashmi & Akram, 2021; Karthick & Uthayakumar, 2022; Kumar et al., 2022; Malekinejad et al., 2022). Within the supply chains, initiatives are more often undertaken aimed at caring for the environment or society (Carter & Jennings, 2004; Ciliberti et al., 2008; Maignan et al., 2002; Yuen et al., 2017).

Sustainable supply chain management means extending the traditional concept of supply chain management with the dimensions of sustainable development. This is reflected in the various supply chains that address economic, environmental, and social demands. Traditionally, many companies only considered profitability and economic factors when designing their supply chain network (Tang & Zhou, 2012). However, the current trend in recent years has turned towards decision-making in supply chain management through the prism of integrating environmental and social aspects with economic aspects (Brandenburg et al., 2014; Lee & Tang, 2018; Li et al., 2021). Going beyond economic goals and integrating environmental and social goals into supply chain decisions is driven by increasing pressure from various stakeholders – including governments, workers, and customers – concerned about issues such as global warming, depletion of natural resources, human rights, etc. (Brandenburg et al., 2014; Majhi et al., 2021).

On the other hand, the international market causes the pressure and expectations of stakeholders to often become global. Globalisation places demands on supply chain management to go beyond purely economic issues, and also take into account, for example, fair working conditions, and environmentally friendly production. Due to the growing awareness of the public about environmentally friendly (green) products, green improvement has become an important factor in supply chain management.

Introducing the principles of sustainable development in supply chains requires that this concept is embedded in the entire organisation, including subsidiaries abroad and offshore suppliers. Considering the growing importance of the “triple-bottom-line” in supply chain management, the ecological and social dimensions are important determinants of modern supply chains (Winter & Lasch, 2016). The pressure to create shared value is forcing companies to deliver win-win outcomes in terms of social responsibility, environmental care, and cost-effectiveness. Internal and external stakeholders also monitor corporate social responsibility and its impact on the environment. The inclusion of the principles of sustainable development in the management of supply chains, therefore, seems to be a necessity.

## References

- Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. *Journal of Cleaner Production*, 52, 329–341. <https://doi.org/10.1016/j.jclepro.2013.02.018>
- Ahi, P., & Searcy, C. (2015). An analysis of metrics used to measure performance in green and sustainable supply chains. *Journal of Cleaner Production*, 86, 360–377. <https://doi.org/10.1016/j.jclepro.2014.08.005>
- Alghababsheh, M., & Gallea, D. (2020). Socially sustainable supply chain management and suppliers’ social performance: The role of social capital. *Journal of Business Ethics*, 0123456789. <https://doi.org/10.1007/s10551-020-04525-1>
- Ansari, Z. N., & Kant, R. (2017). A state-of-art literature review reflecting 15 years of focus on sustainable supply chain management. *Journal of Cleaner Production*, 142, 2524–2543. <https://doi.org/10.1016/j.jclepro.2016.11.023>
- Aslam, H., Rashid, K., Wahla, A. R., & Tahira, U. (2018). Drivers of green supply chain management practices and their impact on firm performance: A developing country perspective. *Journal of Quantitative Methods*, 2(1), 87–113. <https://doi.org/10.29145/2018/jqm/020104>
- Baraniecka, A. (2015). Rozwój ekologicznych łańcuchów dostaw jako skutek kryzysów: ekonomicznego i środowiskowego. *Prace Naukowe Uniwersytetu Ekonomicznego We Wrocławiu*, 383, 235–248. <https://doi.org/10.15611/pn.2015.383.17>
- Beske-Janssen, P., Johnson, M. P., & Schaltegger, S. (2015). 20 years of performance measurement in sustainable supply chain management – what has been achieved? *Supply Chain Management*, 20(6), 664–680. <https://doi.org/10.1108/SCM-06-2015-0216>
- Bhatia, M. S., Jakhar, S. K., Mangla, S. K., & Gangwani, K. K. (2020). Critical factors to environment management in a closed loop supply chain. *Journal of Cleaner Production*, 255, 120239. <https://doi.org/10.1016/j.jclepro.2020.120239>
- Bhatia, M. S., Srivastava, R. K., Jakhar, S. K., & Kumar, S. (2022). What’s critical for closed-loop supply chain operations? – Findings from the Indian small and medium manufacturing enterprises. *Journal of Cleaner Production*, 372, 133791. <https://doi.org/10.1016/j.jclepro.2022.133791>



- Birasnav, M., Chaudhary, R., Henry Dunne, J., Bienstock, J., & Seaman, C. (2022). Green supply chain management: A theoretical framework and research directions. *Computers and Industrial Engineering*, 172(PA), 108441. <https://doi.org/10.1016/j.cie.2022.108441>
- Birou, L. M., Green, K. W., & Inman, R. A. (2019). Sustainability knowledge and training: outcomes and firm performance. *Journal of Manufacturing Technology Management*, 30(2), 294–311. <https://doi.org/10.1108/JMTM-05-2018-0148>
- Bodendorf, F., Wonn, F., Simon, K., & Franke, J. (2022). Indicators and countermeasures of modern slavery in global supply chains: Pathway to a social supply chain management framework. *Business Strategy and the Environment*. <https://doi.org/10.1002/bse.3236>
- Brandenburg, M., Govindan, K., Sarkis, J., & Seuring, S. (2014). Quantitative models for sustainable supply chain management: Developments and directions. *European Journal of Operational Research*, 233(2), 299–312. <https://doi.org/10.1016/j.ejor.2013.09.032>
- Brandenburg, M., Gruchmann, T., & Oelze, N. (2019). Sustainable supply chain management-A conceptual framework and future research perspectives. *Sustainability (Switzerland)*, 11(24). <https://doi.org/10.3390/SU11247239>
- Brzeziński, J., Marzantowicz, L., Ocicka, B., Tyczyna, E., Wieteska, G., & Wieteska-Rosiak, B. (2021). Łańcuchy dostaw bioopakowań w gospodarce o obiegu zamkniętym — koncepcja badań. *Marketing i Rynek*, 03(2021), 3–13. <https://doi.org/10.33226/1231-7853.2021.3.1>
- Carter, C. R., & Jennings, M. M. (2002). Social responsibility and supply chain relationships. *Transportation Research Part E: Logistics and Transportation Review*, 38(1), 37–52. [https://doi.org/10.1016/S1366-5545\(01\)00008-4](https://doi.org/10.1016/S1366-5545(01)00008-4)
- Carter, C. R., & Jennings, M. M. (2004). The role of purchasing in corporate social responsibility: A structural equation analysis. *Journal of Business Logistics*, 25(1), 145–186. <https://doi.org/10.1002/j.2158-1592.2004.tb00173.x>
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution and Logistics Management*, 38(5), 360–387. <https://doi.org/10.1108/09600030810882816>
- Centobelli, P., Cerchione, R., Vecchio, P. Del, Oropallo, E., & Secundo, G. (2022). Blockchain technology for bridging trust, traceability and transparency in circular supply chain. *Information and Management*, 59(7), 103508. <https://doi.org/10.1016/j.im.2021.103508>
- Chen, L., Zhao, X., Tang, O., Price, L., Zhang, S., & Zhu, W. (2017). Supply chain collaboration for sustainability: A literature review and future research agenda. *International Journal of Production Economics*, 194(April), 73–87. <https://doi.org/10.1016/j.ijpe.2017.04.005>
- Choi, T.-M., Feng, L., & Li, Y. (2022). Ethical fashion supply chain operations: product development and moral hazards. *International Journal of Production Research*, 1–18. <https://doi.org/10.1080/00207543.2022.2025943>
- Ciliberti, F., Pontrandolfo, P., & Scozzi, B. (2008). Logistics social responsibility: Standard adoption and practices in Italian companies. *International Journal of Production Economics*, 113(1), 88–106. <https://doi.org/10.1016/j.ijpe.2007.02.049>
- Cole, R., & Aitken, J. (2019). Selecting suppliers for socially sustainable supply chain management: post-exchange supplier development activities as pre-selection



- requirements. *Production Planning and Control*, 30(14), 1184–1202. <https://doi.org/10.1080/09537287.2019.1595208>
- Cooper, M. C., Lambert, D. M., & Pagh, J. D. (1997). Supply chain management: More than a new name for logistics. *The International Journal of Logistics Management*, 8(1), 1–14. <https://doi.org/10.1108/09574099710805556>
- De Angelis, R., Howard, M., & Miemczyk, J. (2018). Supply chain management and the circular economy: Towards the circular supply chain. *Production Planning and Control*, 29(6), 425–437. <https://doi.org/10.1080/09537287.2018.1449244>
- De Giovanni, P., & Zaccaro, G. (2022). A selective survey of game-theoretic models of closed-loop supply chains. *Annals of Operations Research*, 314(1), 77–116. <https://doi.org/10.1007/s10479-021-04483-5>
- de Oliveira, U. R., Espindola, L. S., da Silva, I. R., da Silva, I. N., & Rocha, H. M. (2018). A systematic literature review on green supply chain management: Research implications and future perspectives. *Journal of Cleaner Production*, 187, 537–561. <https://doi.org/10.1016/j.jclepro.2018.03.083>
- Eltantawy, R. A., Fox, G. L., & Giunipero, L. (2009). Supply management ethical responsibility: reputation and performance impacts. *Supply Chain Management: An International Journal*, 14(2), 99–108. <https://doi.org/10.1108/13598540910941966>
- Farooque, M., Zhang, A., Thürer, M., Qu, T., & Huisingh, D. (2019). Circular supply chain management: A definition and structured literature review. *Journal of Cleaner Production*, 228(July), 882–900. <https://doi.org/10.1016/j.jclepro.2019.04.303>
- Geissdoerfer, M., Morioka, S. N., de Carvalho, M. M., & Evans, S. (2018). Business models and supply chains for the circular economy. *Journal of Cleaner Production*, 190, 712–721. <https://doi.org/10.1016/j.jclepro.2018.04.159>
- Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: A systematic literature review. *Supply Chain Management*, 17(5), 531–543. <https://doi.org/10.1108/13598541211258591>
- Gold, S., Hahn, R., & Seuring, S. (2013). Sustainable supply chain management in “Base of the Pyramid” food projects—A path to triple bottom line approaches for multinationals? *International Business Review*, 22(5), 784–799. <https://doi.org/10.1016/j.ibusrev.2012.12.006>
- Gold, S., Trautrimis, A., & Trodd, Z. (2015). Modern slavery challenges to supply chain management. *Supply Chain Management: An International Journal*, 20(5), 485–494. <https://doi.org/10.1108/SCM-02-2015-0046>
- Golińska, P. (2014). Metodyka oceny zrównoważonego wykorzystania zasobów w procesach wtórnego wytwarzania – na przykładzie branży samochodowej. *Gospodarka Materiałowa i Logistyka*, 6, 17–26.
- González-Sánchez, R., Settembre-Blundo, D., Ferrari, A. M., & García-Muiña, F. E. (2020). Main dimensions in the building of the circular supply chain: A literature review. *Sustainability (Switzerland)*, 12(6), 1–25. <https://doi.org/10.3390/su12062459>
- Govindan, K., Mina, H., Esmaceli, A., & Gholami-Zanjani, S. M. (2020). An Integrated hybrid approach for circular supplier selection and closed loop supply chain network design under uncertainty. *Journal of Cleaner Production*, 242, 118317. <https://doi.org/10.1016/j.jclepro.2019.118317>
- Green, K. W., Zelbst, P. J., Meacham, J., & Bhadauria, V. S. (2012). Green supply chain management practices: impact on performance. *Supply Chain Management: An International Journal*, 17(3), 290–305. <https://doi.org/10.1108/13598541211227126>

- Guide, V. D. R., & Van Wassenhove, L. N. (2009). The evolution of closed-loop supply chain research. *Operations Research*, 57(1), 10–18. <https://doi.org/10.1287/opre.1080.0628>
- Gurtu, A., Searcy, C., & Jaber, M. Y. (2015). An analysis of keywords used in the literature on green supply chain management. *Management Research Review*, 38(2), 166–194. <https://doi.org/10.1108/MRR-06-2013-0157>
- Hashmi, S. D., & Akram, S. (2021). Impact of green supply chain management on financial and environmental performance: Mediating role of operational performance and the moderating role of external pressures. *Logforum*, 17(3), 359–371. <https://doi.org/10.17270/J.LOG.2021.602>
- Hassini, E., Surti, C., & Searcy, C. (2012). A literature review and a case study of sustainable supply chains with a focus on metrics. *International Journal of Production Economics*, 140(1), 69–82. <https://doi.org/10.1016/j.ijpe.2012.01.042>
- Hendiani, S., Mahmoudi, A., & Liao, H. (2020). A multi-stage multi-criteria hierarchical decision-making approach for sustainable supplier selection. *Applied Soft Computing*, 94, 106456. <https://doi.org/10.1016/j.asoc.2020.106456>
- Karthick, B., & Uthayakumar, R. (2022). A closed-loop supply chain model with carbon emission and pricing decisions under an intuitionistic fuzzy environment. In *Environment, Development and Sustainability* (Issue 0123456789). Springer Netherlands. <https://doi.org/10.1007/s10668-022-02631-w>
- Katsoras, E., & Georgiadis, P. (2022). An integrated system dynamics model for closed loop supply chains under disaster effects: The case of COVID-19. *International Journal of Production Economics*, 253(June), 108593. <https://doi.org/10.1016/j.ijpe.2022.108593>
- Kim, T., Glock, C. H., & Kwon, Y. (2014). A closed-loop supply chain for deteriorating products under stochastic container return times. *Omega*, 43, 30–40. <https://doi.org/10.1016/j.omega.2013.06.002>
- Koberg, E., & Longoni, A. (2019). A systematic review of sustainable supply chain management in global supply chains. *Journal of Cleaner Production*, 207, 1084–1098. <https://doi.org/10.1016/j.jclepro.2018.10.033>
- Kühl, C., Bourlakis, M., Aktas, E., & Skipworth, H. (2022). Product-service systems and circular supply chain practices in UK SMEs: The moderating effect of internal environmental orientation. *Journal of Business Research*, 146(December 2020), 155–165. <https://doi.org/10.1016/j.jbusres.2022.03.078>
- Kumar, P., Mangla, S. K., Kazancoglu, Y., & Emrouznejad, A. (2022). A decision framework for incorporating the coordination and behavioural issues in sustainable supply chains in digital economy. *Annals of Operations Research*. <https://doi.org/10.1007/s10479-022-04814-0>
- Kumar, R., & Bangwal, D. (2022). An assessment of sustainable supply chain initiatives in Indian automobile industry using PPS method. *Environment, Development and Sustainability*, 0123456789. <https://doi.org/10.1007/s10668-022-02456-7>
- Kumar, S., & Yamaoka, T. (2007). System dynamics study of the Japanese automotive industry closed loop supply chain. *Journal of Manufacturing Technology Management*, 18(2), 115–138. <https://doi.org/10.1108/17410380710722854>
- Kuvvetli, Y., & Erol, R. (2020). Coordination of production planning and distribution in closed-loop supply chains. *Neural Computing and Applications*, 32(17), 13605–13623. <https://doi.org/10.1007/s00521-020-04770-5>

- Lee, H. L., & Tang, C. S. (2018). Socially and environmentally responsible value chain innovations: new operations management research opportunities. *Management Science*, 64(3), 983–996. <https://doi.org/10.1287/mnsc.2016.2682>
- Li, X., Xu, M., & Shi, X. (2021). Coordination of a socially responsible supply chain with cause marketing campaigns. *Journal of Systems Science and Systems Engineering*, 30(6), 728–747. <https://doi.org/10.1007/s11518-021-5516-2>
- Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, 25(6), 1075–1082. <https://doi.org/10.1016/j.jom.2007.01.012>
- Maignan, I., Hillebrand, B., & McAlister, D. (2002). Managing socially-responsible buying: how to integrate non-economic criteria into the purchasing process. *European Management Journal*, 20(6), 641–648. [https://doi.org/10.1016/S0263-2373\(02\)00115-9](https://doi.org/10.1016/S0263-2373(02)00115-9)
- Majhi, J. K., Giri, B. C., & Chaudhari, K. S. (2021). Coordinating a socially responsible supply chain with random yield under CSR and price dependent stochastic demand. *International Journal of Supply and Operations Management*, 8(2), 194–211. <https://doi.org/10.22034/IJSOM.2021.2.6>
- Malekinejad, P., Ziaei, M., & Hosseini Bamakan, S. M. (2022). A communication model for reducing the bullwhip effect in closed-loop supply chain. *Advances in Industrial and Manufacturing Engineering*, 5(June), 100086. <https://doi.org/10.1016/j.aime.2022.100086>
- Marić, J., & Opazo-Basáez, M. (2019). Green servitization for flexible and sustainable supply chain operations: A review of reverse logistics services in manufacturing. *Global Journal of Flexible Systems Management*, 20(December), 65–80. <https://doi.org/10.1007/s40171-019-00225-6>
- Mentzer, J. T., Dewitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22(2), 1–25.
- Mienczyk, J., & Luzzini, D. (2019). Achieving triple bottom line sustainability in supply chains: The role of environmental, social and risk assessment practices. *International Journal of Operations and Production Management*, 39(2), 238–259. <https://doi.org/10.1108/IJOPM-06-2017-0334>
- New, S. J. (2015). Modern slavery and the supply chain: The limits of corporate social responsibility? *Supply Chain Management: An International Journal*, 20(6), 697–707. <https://doi.org/10.1108/SCM-06-2015-0201>
- Niu, S., Zhuo, H., & Xue, K. (2019). DfRem-driven closed-loop supply chain decision-making: A systematic framework for modeling research. *Sustainability (Switzerland)*, 11(12). <https://doi.org/10.3390/SU11123299>
- Ramanathan, U., Bentley, Y., & Pang, G. (2014). The role of collaboration in the UK green supply chains: An exploratory study of the perspectives of suppliers, logistics and retailers. *Journal of Cleaner Production*, 70, 231–241. <https://doi.org/10.1016/j.jclepro.2014.02.026>
- Sancha, C., Gimenez, C., & Sierra, V. (2016). Achieving a socially responsible supply chain through assessment and collaboration. *Journal of Cleaner Production*, 112, 1934–1947. <https://doi.org/10.1016/j.jclepro.2015.04.137>
- Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, 130(1), 1–15. <https://doi.org/10.1016/j.ijpe.2010.11.010>

- Seuring, S., & Müller, M. (2008a). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699–1710. <https://doi.org/10.1016/j.jclepro.2008.04.020>
- Seuring, S., & Müller, M. (2008b). Core issues in sustainable supply chain management – a Delphi study. *Business Strategy and the Environment*, 17(8), 455–466. <https://doi.org/10.1002/bse.607>
- Shafiq, A., Ahmed, M. U., & Mahmoodi, F. (2020). Impact of supply chain analytics and customer pressure for ethical conduct on socially responsible practices and performance: An exploratory study. *International Journal of Production Economics*, 225, 107571. <https://doi.org/10.1016/j.ijpe.2019.107571>
- Sinkovics, N., Hoque, S. F., & Sinkovics, R. R. (2016). Rana plaza collapse aftermath: Are CSR compliance and auditing pressures effective? *Accounting, Auditing and Accountability Journal*, 29(4), 617–649. <https://doi.org/10.1108/AAAJ-07-2015-2141>
- Sisco, C., Chorn, B., & Pruzan-Jorgensen, P. M. (2011). *Supply chain sustainability: A practical guide for continuous improvement*. <https://unglobalcompact.org/library/205>
- Somjai, S., Vasuvanich, S., Laosillapacharoen, K., & Jermstittiparsert, K. (2020). The impact of the greening of the supplier on competitive advantage: Does green innovation matter in Thai auto industry? *International Journal of Supply Chain Management*, 9(1), 54–61.
- Stock, J. R., & Boyer, S. L. (2009). Developing a consensus definition of supply chain management: A qualitative study. *International Journal of Physical Distribution and Logistics Management*, 39(8), 690–711. <https://doi.org/10.1108/09600030910996323>
- Sun, L., Wang, Y., Hua, G., Cheng, T. C. E., & Dong, J. (2020). Virgin or recycled? Optimal pricing of 3D printing platform and material suppliers in a closed-loop competitive circular supply chain. *Resources, Conservation and Recycling*, 162(June), 105035. <https://doi.org/10.1016/j.resconrec.2020.105035>
- Tang, C. S. (2018). Socially responsible supply chains in emerging markets: Some research opportunities. *Journal of Operations Management*, 57(January), 1–10. <https://doi.org/10.1016/j.jom.2018.01.002>
- Tang, C. S., & Zhou, S. (2012). Research advances in environmentally and socially sustainable operations. *European Journal of Operational Research*, 223(3), 585–594. <https://doi.org/10.1016/j.ejor.2012.07.030>
- Taticchi, P., Tonelli, F., & Pasqualino, R. (2013). Performance measurement of sustainable supply chains: A literature review and a research agenda. *International Journal of Productivity and Performance Management*, 62(8), 782–804. <https://doi.org/10.1108/IJPPM-03-2013-0037>
- Touboulic, A., & Walker, H. (2015). Theories in sustainable supply chain management: A structured literature review. *International Journal of Physical Distribution & Logistics Management*, 45(1/2), 16–42. <https://doi.org/10.1108/IJPDLM-05-2013-0106>
- Tseng, M.-L., Islam, M. S., Karia, N., Fauzi, F. A., & Afrin, S. (2019). A literature review on green supply chain management: Trends and future challenges. *Resources, Conservation and Recycling*, 141, 145–162. <https://doi.org/10.1016/j.resconrec.2018.10.009>
- Urbaniak, M. (2018). The role of green product development in building relationship in supply chain. *Journal of Advanced Management Science*, 103–108. <https://doi.org/10.18178/joams.6.2.103-108>
- Vaaland, T., & Owusu, R. (2012). What is responsible supply chain? *International Journal of Business Management*, 7(4), 154–171.

- Villanueva-Ponce, R., Garcia-Alcaraz, J. L., Cortes-Robles, G., Romero-Gonzalez, J., Jiménez-Macías, E., & Blanco-Fernández, J. (2015). Impact of suppliers' green attributes in corporate image and financial profit: Case maquiladora industry. *International Journal of Advanced Manufacturing Technology*, 80(5–8), 1277–1296. <https://doi.org/10.1007/s00170-015-7082-6>
- Walker, H., Di Sisto, L., & McBain, D. (2008). Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors. *Journal of Purchasing and Supply Management*, 14(1), 69–85. <https://doi.org/10.1016/j.pursup.2008.01.007>
- Wang, Y., Hazen, B. T., & Mollenkopf, D. A. (2018). Consumer value considerations and adoption of remanufactured products in closed-loop supply chains. *Industrial Management & Data Systems*, 118(2), 480–498. <https://doi.org/10.1108/IMDS-10-2016-0437>
- Winter, S., & Lasch, R. (2016). Environmental and social criteria in supplier evaluation – Lessons from the fashion and apparel industry. *Journal of Cleaner Production*, 139, 175–190. <https://doi.org/10.1016/j.jclepro.2016.07.201>
- Witkowski, J., & Pisarek, A. (2017). Istota zielonych łańcuchów dostaw – propozycja systematyzacji pojęć. *Studia Ekonomiczne*, 315(315), 11–26.
- Wu, G. (2013). The influence of green supply chain integration and environmental uncertainty on green innovation in Taiwan's IT industry. *Supply Chain Management: An International Journal*, 18(5), 539–552. <https://doi.org/10.1108/SCM-06-2012-0201>
- Yadav, S., & Singh, S. P. (2020). Blockchain critical success factors for sustainable supply chain. *Resources, Conservation and Recycling*, 152, 104505. <https://doi.org/10.1016/j.resconrec.2019.104505>
- Yang, Q., Geng, R., & Feng, T. (2020). Does the configuration of macro- and micro-institutional environments affect the effectiveness of green supply chain integration? *Business Strategy and the Environment*, 29(4), 1695–1713. <https://doi.org/10.1002/bse.2462>
- Yıldız Çankaya, S., & Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*, 30(1), 98–121. <https://doi.org/10.1108/JMTM-03-2018-0099>
- Yuen, K. F., Thai, V. V., & Wong, Y. D. (2017). Corporate social responsibility and classical competitive strategies of maritime transport firms: A contingency-fit perspective. *Transportation Research Part A: Policy and Practice*, 98, 1–13. <https://doi.org/10.1016/j.tra.2017.01.020>
- Zimon, D., Tyan, J., & Sroufe, R. (2019). Implementing sustainable supply chain management: reactive, cooperative, and dynamic models. *Sustainability*, 11(24), 7227. <https://doi.org/10.3390/su11247227>
- Zu-Jun, M., Zhang, N., Dai, Y., & Hu, S. (2016). Managing channel profits of different cooperative models in closed-loop supply chains. *Omega*, 59, 251–262. <https://doi.org/10.1016/j.omega.2015.06.013>