

---

# EVALUATION OF GREEN SUPPLY CHAIN - REFERENCE MODELS APPROACH

---

Preliminary communication

UDK: 658.78:502.1

JEL classification: M2, R4

Accepted for publishing: October 31, 2019

## **Abstract**

*Currently, the principles of sustainable development are playing an increasingly important role in running a global business and economy. The development of the concept of a sustainable supply chain is possible with the use of economic, environmental and social aspects in the processes and activities carried out. These aspects are becoming one of the elements of the decision-making process. The presented considerations are aimed at indicating reference models of evaluation of the functioning of the green supply chain in the context of growth the efficiency in the new business strategy. The content analysis of the literature has made it possible to identify common, input and necessary elements, as well as drivers, barriers and correction mechanisms that have served as the basis for building a reference model for the assessment of the functioning the green supply chain. The conceptual model integrates the identified factors, based on the management theories used in literature and practice, which at the same time serve the purpose of clarifying the adoption of indicated practices in a given subject area. The limitation and gaps, which occur in literature, as well as further directions of research were indicated. The value and novelty of the considerations consists in the proposition of model solutions in the scope of evaluation of the functioning of the green supply chain, which may serve as a basis for the construction of the green supply chain model, at the same time indicating the elements that will be taken into account in the evaluation of this strategy, including the scope of implementation of pro-environmental solutions, using management tools and management theories.*

**Keywords:** *green supply chain, reference models, measurement*

## **1. INTRODUCTION<sup>1</sup>**

Issues related to the use of sustainable development principles and tools in business strategies are becoming more and more popular and arouse growing interest both among scientists and business practitioners. In business practice, this interest often accompanies marketing activities and is not always understood as a necessary element of a new business strategy.

Managing a new business requires the identification of elements that have a negative/neutral/positive impact on the environment. Referring to supply chain vulnerability considerations, it should be pointed out that a special role is assigned to the leaders of such chains and

---

<sup>1</sup> The project is financed within the framework of the program of the Minister of Science and Higher Education under the name "Regional Excellence Initiative" in the years 2019 - 2022; project number 001/RID/2018/19; the amount of financing is PLN 10,684,000.00

their involvement in the process of implementing a new business. It is the task of the leaders to set the rules and requirements for the partners and other links in the chain. One of the ways is to set standards for environmental management systems along with close cooperation with stakeholders. Actions to build a new, innovative business must consist in creating a concept, promoting it by the leader, as well as using tools and instruments that support the implementation of the concept throughout the chain.

Activities related to environmental aspects have to be addressed comprehensively and all actors in the chain have to account for the environmental aspects. Actions must also consider consumers and their interaction with them, as one of the primary tasks is to ensure that the product lasts as long and as good as possible for the user.

It should be pointed out that consumers play a very important role in the creation of the green supply chain, especially those who are aware of their choices and who pay attention, not only to the product but also to what is going on in the chain. But not only that. Ideas and strategies related to shaping attitudes related to sustainable development should be shaped, demanded and promoted also among consumers, including the final ones. Actions that can be taken within the framework of planned solutions include suggestions, advice, recommendations, in the last resort it can be pressure. It is worth pointing out that many products have the greatest impact on the environment at the use stage, which means that only proper use of them can help reduce the negative impact on the environment, and thus meet the requirements of sustainable supply chains. Such actions predispose to create business functioning and assessment models (including supply chain strategy) that include all stakeholders.

The evaluation of a green chain can be based on reference models, indicating the green chain as a business model and considering both the barriers and benefits of implementing such solutions.

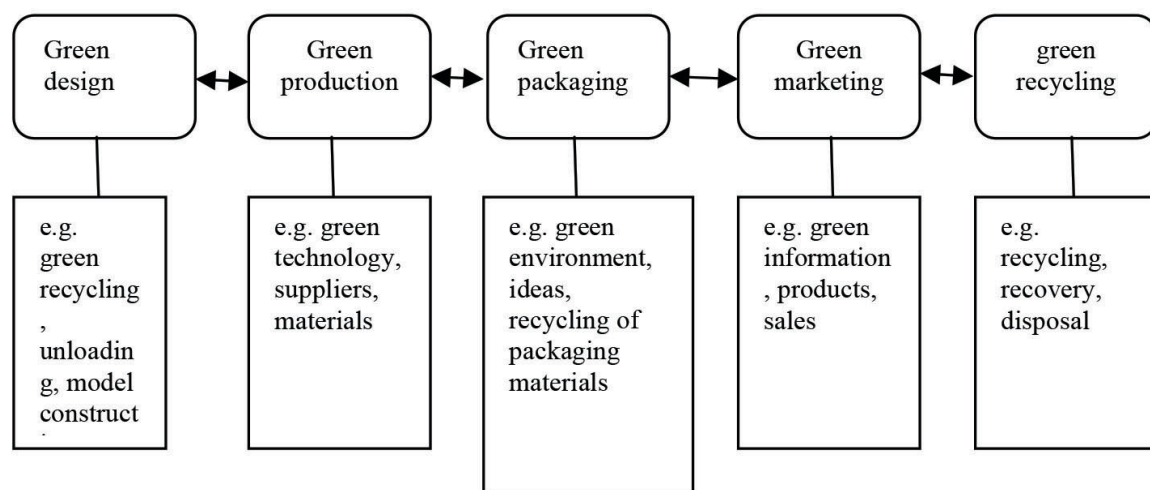
## **2. RESEARCH GAPS AND AIMS**

Many studies related to green and sustainable supply chain are available in the literature. However, reference models and guidance on how to create and assess chains from an environmental point of view cannot be found, especially when taking into account and including consumers in the consideration. Critical literature analysis and practical solutions for the implementation of the green supply chain were used to develop the reflections. The aim of the discussion is to present the factors influencing the creation of new business models (green supply chains), including barriers and benefits, as well as the basis (components) for the construction of such models, and to assess their functioning, with emphasis not only on business partners creating the chain, but also on consumers.

## **3. GREEN SUPPLY CHAIN AS A NEW BUSINESS MODEL**

The idea of the supply chain can be considered a business model. Therefore, the different types and aspects considered in this Green Supply Chain are also a kind of new model. It is related to the fact that the pro-ecological activities significantly influence the activity of the chain and the units operating within it. (Tundys, 2016). As regards the supply chain, several of the universally accepted definitions should be adapted, indicating that the business model is more than just a good and logical way to do business, as it must first and foremost be user-driven, difficult for competitors to imitate and strongly based on the realities and conditions in which the company operates (Teece, 2010). It is also a 'concise presentation of how a related set of decision variables in the areas of higher risk, strategy, architecture and economics is predestined to create sustainable competitive advantage in defined markets. It has six basic elements: value, customer, internal processes and competences, external position, economic objectives and investment activities. (Morris, et al. 2005). The business model logically supports and creates value for the customer and the real structure of revenues and costs for the company, which provide the basis and bring this value (Teece, 2010). The business model should lead to the creation of a balanced competitive advantage of the company in a given market and take into account the decision variables related to each

of the three aspects mentioned above, i.e. strategic, operational and financial (Kardas, 2016). Business models, due to their specific structure, are supposed to take advantage of and create the value of new business opportunities, as well as the directions of development of economies. By adopting such an approach, the supply chain fits into the ideas of the business model, and by going further and detailing and distinguishing different types, types and strategies of the supply chain, the pro-ecological approach, which is the most important in the green supply chain, is a new type and model of conducting business, allowing to achieve a competitive advantage. Green supply chain means redesigning processes and rules of cooperation, where customer satisfaction and meeting customer expectations (offering products that meet customer requirements) become the most important values, but also reducing the negative impact of processes and activities taking place in the chain on the natural environment, which brings positive results for all stakeholders (Tundys, 2016). The flow concept proposed by Baojuan (Baojuan, 2008) reflects the management of the green supply chain as a new business model (Figure 1). It clearly shows the focus and elements that will determine innovation and the sources of competitive advantage of a given chain.



Source: Baojuan, S. H. I. (2008). Green supply chain management and implementing strategy. International Conference on Logistics Engineering and Supply Chain

Figure 1 Green supply chain processes

Supply chain business models should be linked to the creation of the value chain. In this respect, K. Obłój presents the rules for configuring such a chain (Obłój, 2002):

- an operator model in which the company focuses on one selected aspect of the value chain,
- an integrator model where the company expands the value chain to control the entire value creation and capture process,
- the conductor's model, in which the company deconcentrates its activities through e.g. outsourcing and alliances with other entities

Ch.B. Stabell and Ø.D Fjeldstad (Stabell, C.B., Fjeldstad Ø.D, 2005) indicate that the concept of value chain proposed by M.E. Porter is not applicable in all industries, hence they propose to additionally distinguish two other ways of organizing the activity of enterprises, referred to as value shop and value network. The Value refers mainly to service companies that are focused on solving specific customer problems and require the company to adapt the entire value creation process to the specificity of the problem and the customer (the basic activities of the company are identifying problems, finding solutions and choosing the optimal solution, implementation, control and evaluation). On the other hand, within the value network, the company acts as an intermediary in creating value and enables contact between different customers - the company's basic activities include promoting the network and managing contacts, providing services, infrastructural operations. The literature indicates that new business models are variations (combinations) of the basic value chain that underpins any business activity (Magretta,

2002). A.J. Slywotzky, et al. (Slywotzky, 2000) speak about the so-called modern value chain, which is a reversal of the traditional value chain, starting with the customer and ending with resources and competences. Chain models as business models are presented in Table 1. Assuming and taking into account that a new look at and consideration of environmental aspects is also important in value creation, we can definitely point out that green supply chains are also a new business model that fits into the value creation chain model.

Table 1. Models of chain in the context of the new business strategy

Channel model	Characteristics
channel maximization	Content is delivered through as many channels as possible to maximize advertising and subscription revenues. Vertical integration may be possible to reduce costs and maximise revenues, or concentration on a particular segment of buyers.
cat-daddy selling	The company offers a wide range of products and accessories within a given category at favourable prices. The company manages supplier relationships to reduce costs and provides advice on the effective use of products.
quality selling	The company offers high quality and/or unique products, ensures high quality of service and after-sales service. The management of relations with suppliers and logistics is aimed at ensuring high quality of services.
value-added reseller	Intermediation in the sale of undifferentiated products, but with valuable after-sales services (consulting, service) to a specific segment of buyers. The company provides effective logistics and an effective delivery system.
ultimate luxury	The company's strategy is to focus on the most affluent customers by selling luxury products at a very high price.
Integrator	Integrator controls all elements of the value creation process, including resources and skills. This results in economies of scope and scale and reduces dependence on suppliers.
Layer player	A company that provides one of the elements of value creation within different value chains (different sectors and markets). The company benefits from economies of scale and specialization and ensures high process quality through experience.
direct selling	Products are offered directly to customers by the manufacturer (excluding intermediaries), which reduces costs and improves customer relations.
Disintermediation	Removal of intermediaries from the supply chain - sales directly to the customer (e.g. Dell).
e-commerce	Traditional products or services are offered over the Internet.
User Design	The customer is the manufacturer and designer via the appropriate web platforms. Customers realize their ideas without having to invest in costly infrastructure.
digitisation	Offering available products and services in digital form, which allows for easier and faster distribution.
Orchestrator	The company focuses on key competencies within the value chain, while the rest of the chain is implemented by other entities whose activities are coordinated by the company.
From supply to demand	The company's strategy is based on decentralisation, improved flexibility and better adaptation to customer needs. It covers every element of the value chain.

Source: M. Kardas, 2016

The potential of the green chain is strongly reinforced by environmental concerns, which are reflected in the driving forces. However, this does not mean that there are no barriers or problems in creating and functioning of this type of business model. The main barriers and opportunities, developed on the basis of the literature on the subject are presented in Table 2.

The main opportunities and driving forces behind the green supply chain include: customer demand for sustainable products and, consequently, increased customer awareness, which should be extended to all processes in the supply chain, legal requirements, reduction of costs in the chain by minimizing the consumption of products. The most important barriers include: costs of implementing new solutions and lack of readiness of suppliers and supply chain participants to implement them. Such conclusions can be drawn from literature and studies such as: Zhu et al. (2007), Handfield et al. (1997), Seuring and Muller (2008), Smith and Crotty (2008), Srivastava (2008) and Thun and Muller (2010).

Table 2 Opportunities (driving forces) and barriers to the creation and functioning of a green supply chain

Green supply chain			
opportunities/ drivers	barriers		
internal	new enterprise policy	internal	costs
	The desire to reduce costs, investor pressure and economic risk management		the need to reduce costs
	The desire to reduce costs, improve quality and value		lack of understanding of how to integrate "greening" into supply chain processes
	Extension of value for owners		the unavailability of financial resources (loans) to encourage the development of new environmentally friendly solutions
	value for owners and managers improving the company's position		focus on cost reduction at the expense of green practices, lack of involvement in management or lack of awareness among buyers
	Employee involvement		lack of training
	striving to reduce costs		lack of commitment
	pressure from investors		costs as a barrier to greening in general
	Improvement of quality		accounting methods limit the possibilities of green accounting and reporting
			low price pressure
	Corporate culture		
external	Legal regulations zone	external	lack of legitimacy
	adjustment to the requirements of legal regulations		Greenwashing - "green lie"
	proactive preventive measures		adjustments
	ISO 14000 certification		inhibition of innovation
	Regulatory compliance		low level of supplier involvement
consumers	Consumer pressure to create a green supply chain	external	lack of exchange of information
	consumer demand and demand cooperation with consumers		specific sectoral barriers
	e-logistics and environment		different sectors have different challenges
	marketing pressure		lack of implementation of innovative solutions, including IT
	competitiveness		Resistance to changes in IT and technological progress, lack of integration of IT systems, lack of acceptance of advanced new technologies
	obtaining a competitive advantage		lack of organisational support
	Improvement of productivity		lack of qualified human resources
			market uncertainty and competition
	lack of administrative support system (at state level government)		

society	stakeholders can support the environmental strategy	customer	lack of implementation of green practices
	positive perception and image of the organisation		lack of involvement of managers
	public pressure		cost implications, implementation costs
	reducing the risk of consumer criticism	customer	customer ignorance, customer ignorance in relation to the green supply chain and green products
	pressure from environmental groups	society	lack of social pressure
	opinion and influence of non-commercial entities		lack of followers
suppliers	cooperation with suppliers	suppliers	lack of knowledge, experience and training in the green supply chain
	Integration of suppliers		no "green" followers.
	legal principles and legislation		lack of management initiatives in transport and logistics
	Green image and competitive advantage		fear of failure to carry out innovations related to greening of processes
	public pressure (including customers) and awareness		lack of a recycling and reuse system
	social and environmental responsibility		lack of environmental certification
	economic benefits		costs of disposal of dangerous products
		lack of CSR in organisations	
			unwillingness of suppliers to change towards a green supply chain

Source: Walker, H., Di Sisto, L., & McBain, D. (2008); Luthra, S., Kumar, V., Kumar, S., & Haleem, A. (2011), Dashore, K., & Sohani, N. (2008); Jayant, A., & Azhar, M. (2014), Niemann, W., Kotze, T., & Adamo, F. (2016).

#### 4. FRAMEWORK FOR THE REFERENCE MODEL

Green supply chain management aims to reduce waste and pollution by integrating environmental thinking into product design (and packaging) and end-of-life management. (Rehman & Shrivastava, 2011). The main focus is on environmental aspects and their implementation in each link of the chain. Green supply chain management is based on a combination of supply chain management and environmental management. It should also be pointed out that the management of this type of chain refers not only to standard manufacturing processes, but also to a number of logistics activities, such as material handling, packaging and disposal. Understanding the essence of the green chain is about implementing a new way of thinking, in which all activities and processes performed so far will, on the one hand, be subordinated to the standard objectives of the chain and, on the other hand, will meet environmental objectives (environmental protection and resource protection, as well as the use of environmentally neutral technologies to manage the entire supply chain as much as possible). The aim of such solutions is to integrate and recognise environmental aspects (including environmental protection) as an integral part of supply chain management in an appropriate way as a standard.

This approach predestines the inclusion of consumers in chain management (especially in terms of environmental protection), whose attitudes are extremely important, especially in terms of the use of the product. It is also important to behave appropriately with a product that is already worn out and has reached the end of its life cycle. In this respect, the behaviours related to the

management of residues are important. This area includes logistics and linking up - expansion of the supply chain. The processes related to the collection and further handling of the disposal, recycling and reuse of the product or its parts. The problem in this understanding of the (very broad) chain and the need for cooperation with consumers is to encourage them to take joint action. It is often a decision whether or not to cooperate or not to benefit from the cooperation (cost savings, time savings).

Another stakeholder and at the same time a link that must be included in the new business strategy, which, on the other hand, a lot depends on, is extended producer responsibility, whose task is to collect from consumers the products that have reached the end of their life cycle. An important element is also related to the fact that they must be managed by the manufacturer. Such centralized actions, undertaken by producers, usually imposed by law, are conducive to recovery and recycling. This forces producers to internalise the total or partial costs of collecting, recycling and, possibly, storing the product. It also entails the obligation to provide consumers with information on the product and its environmental impact throughout its life cycle, as well as the creation of a return system (Kronenberg, J., Bergier, T., (2010)). Such activities form a further part of the reference models for Green Supply Chain activities.

Trade intermediaries also play an important role, including chains of commerce in relation to a large number of products. More and more global distribution networks take actions to green their chains. A large buyer such as retail chains can influence other links in the chain, including introducing and initiating significant changes in the chain.

Eco-friendly supply chain management is certainly a new approach and a new business model. It is derived from a systemic approach, where every stakeholder, every smallest link and its activities have an impact on the environment and society. Managing a new business requires the identification of elements that have a negative/neutral/positive impact on the environment. A special role is assigned to the leaders of such chains and their involvement in the process of implementation of a new type of business. It is the task of the leaders to set the rules and requirements for the cooperation partners and other links in the chain. One of the ways is to set standards of environmental management systems along with close cooperation with stakeholders. Building a new, innovative business must be about creating a concept, promoting it by a leader, and using tools and instruments that support the implementation of the concept throughout the chain. These include: codes of conduct, supplier requirements standards, supplier audits, training and assistance to suppliers in meeting requirements, adequate information flow between the links, identification of key environmental and social impacts throughout the supply chain, risk assessment, related to opportunities, barriers and implementation issues, use of LCA and LCM concepts, eco-design, supplier audit and green procurement, eco-labelling. Suggestions, instructions, recommendations from different social groups, cooperation with the NGO sector to support educational activities, support for extended producer responsibility and support for reimbursement processes play an important role.

Undoubtedly, the responsibility for procurement, including appropriate green criteria for selecting suppliers is of particular importance. It is not only about suppliers of materials, but also about cooperation and requirements relating to transport and logistics companies. These decisions can be divided into strategic and operational ones. The first refers to the location of supplier or product processing plants at the end of their useful lives, and the operational one refers to the choice of business partners or transport companies (Kronenberg, J., Bergier, T., (2010)). Within the framework of solutions at the level of the entire chain, it also means that the leader undertakes activities typically related to logistics management on behalf of other entities. On the one hand, they are aimed at more effective operations, and on the other hand they support the implementation of ecological solutions or mitigate the negative impact of activities undertaken within the scope of activities and processes on the natural environment. These activities will relate to the optimization of routes, the most efficient use of means of transport, minimization of logistic costs, promotion of "clean", intermodal transport, optimization of packaging.

The implementation of CSR in companies is another important factor. It not only takes into account social and environmental interests in their activities, but it is also an effective management strategy, which contributes to the growth of competitiveness of enterprises in the global dimension and the improvement of specific economic indicators. Standards applied in relations with suppliers and sustainable approach to the acquisition of raw materials are becoming increasingly important criteria for the evaluation of companies; they are used, among others, in the development of rankings of responsible companies or the construction of "ethical" stock exchange indices. Many organisations oriented on export production use this is also as a specific characteristic, often necessary when applying for contracts. For this reason, many global players not only conduct detailed checks on their suppliers, but also report on the progress made, even if the requirement for transparency "forces them" to admit their mistakes.

In the context of the different levels and elements of the chain, it is possible to classify the types of activities and assessments of activities that are related to the greening of the chain. Activities range from design to operation of returns, using the appropriate measuring instrumentation. (Table 3).

Table 3 Players, activities and assessment of greening activities throughout the supply chain

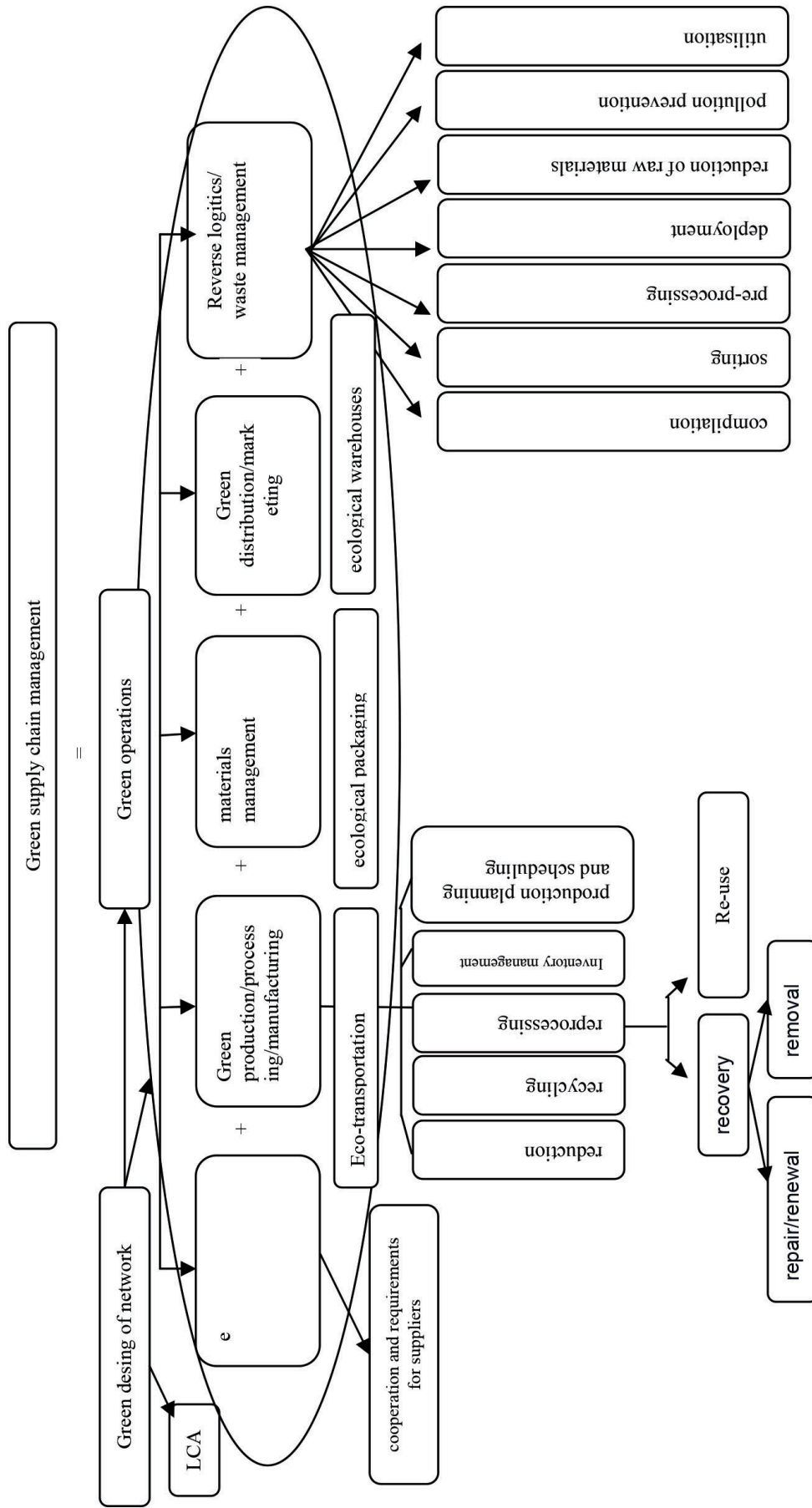
	Upstream	Midstream	Downstream
players	suppliers of raw materials	main suppliers, the manufacturer,	wholesalers, importers/distributors, retailers
activities	component suppliers	(design) dismantling, scrapping, transportation	packaging, handling/manipulation of returns, return of shipments
Relationship and performance measurement	Selection of materials	size of disassembled materials per hour, degree of use of transport equipment	the amount of 'air' in the packaging, the volume of materials to be recycled

Source: Van Hoek, R. I. (1999). From reversed logistics to green supply chains. *Supply Chain Management: An International Journal*, 4(3), 129-135. (134)

There is no single universal reference model for the green supply chain. They differ both depending on the industry, the scope of activity, the environment in which they operate, the adopted business models, and the structure of the organizations creating them.

Proper, green supply chain management can be interpreted in accordance with the assumptions of Figure 1, which includes: Green Supply Chain Management = Green Purchasing + Green Manufacturing + Materials Management + Green Distribution/Marketing + Reverse Logistics.

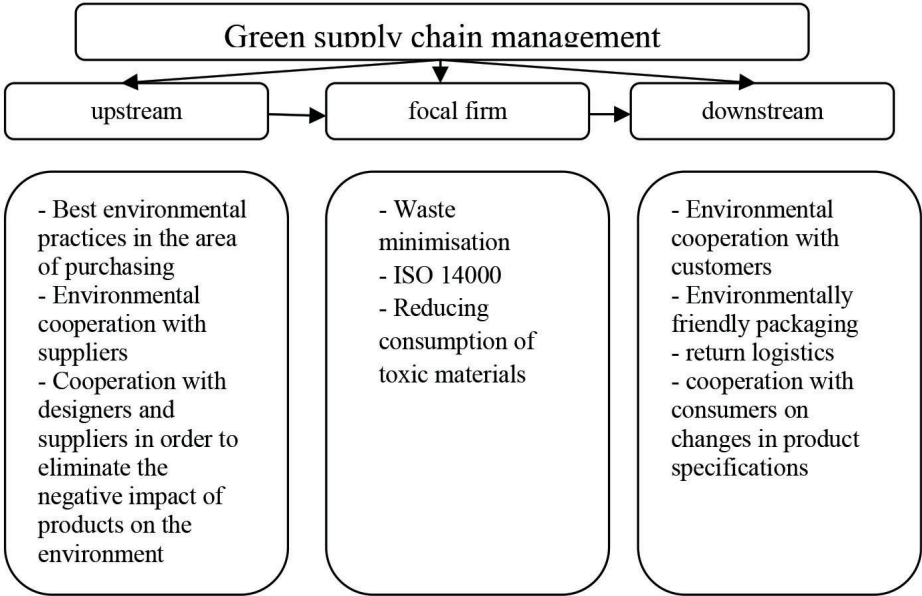




Source: own elaboration

Figure 1 Green supply chain management

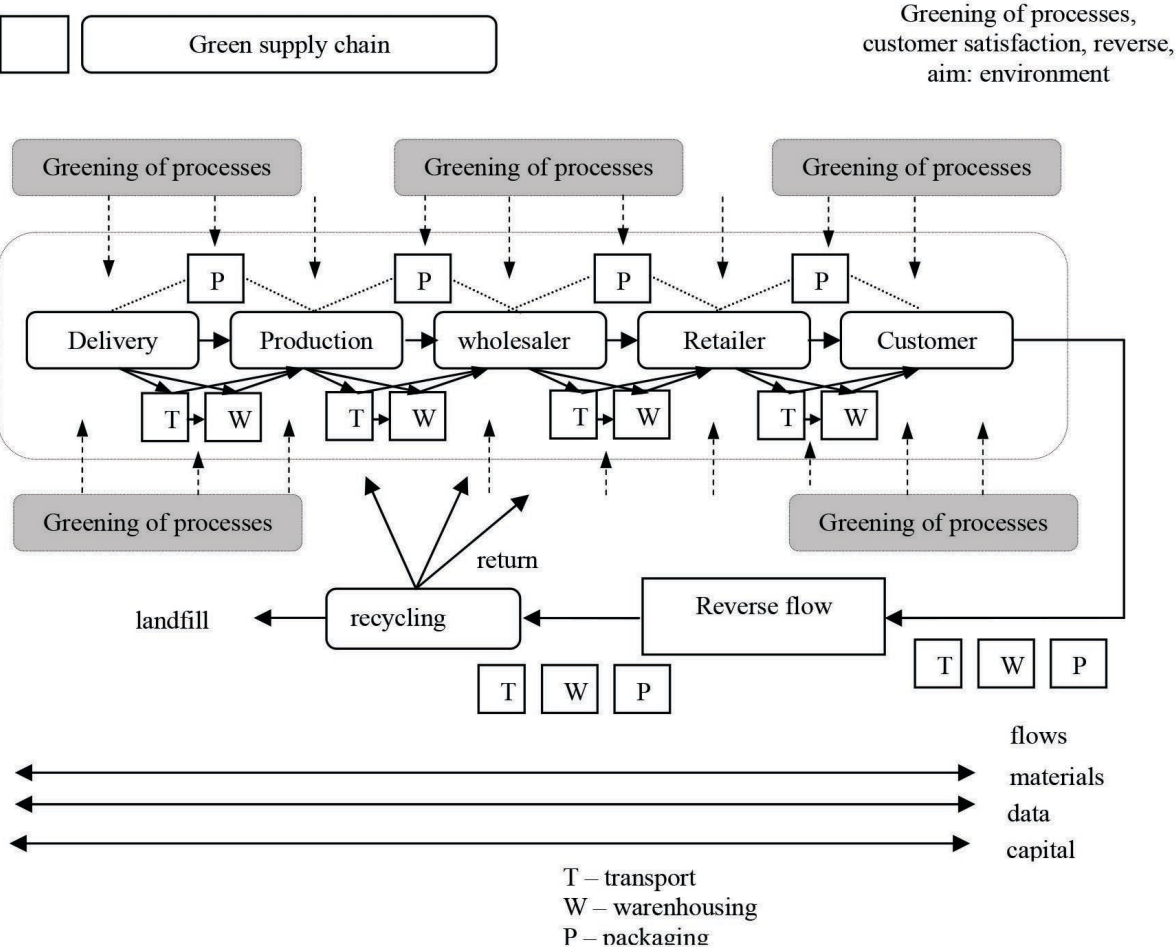
Green practices in the context of the supply chain can be considered from the point of view of: suppliers: (1) ecological (environmental) cooperation with suppliers. This is reflected in the provision of design specifications for suppliers containing environmental requirements for the purchased goods; the provision of environmental and/or ethical criteria for goods and services to suppliers; the collaboration with designers and product suppliers to reduce and eliminate environmental impacts; the collaboration with industry to harmonise requirements for suppliers and purchased goods; (2) Encouraging suppliers to adopt more environment friendly behaviour, reflected as: Encouraging suppliers to take back packaging; green purchasing and sourcing; Use of environmental purchasing or logistics guidelines; use of recyclable pallets for supplied materials; (3) Control of suppliers' environment; (4) Assessment of second row suppliers of environmentally friendly practices; (5) Promoting recognition of environmental performance: by promoting ISO 14000 certification for suppliers. Focusing companies (central companies) (1) Developing environmentally friendly products: designing products so as to avoid the use of hazardous materials, including the production process; working with designers and suppliers to reduce and eliminate environmental impact; using environmentally friendly raw materials; reducing raw material (i.e., the use of materials that are not hazardous to health or the environment); reducing raw materials (i.e., the use of materials that are not hazardous to health or the environment). Use of recycled material) in the manufacture of products; Design of products for disassembly (2) Implementation of internal environmental measures; internal recycling of materials in the production phase; waste minimisation; reduction of hazardous and toxic materials consumption; use of filters and emission controls; sale of scrap metal and used materials; reduction of energy consumption; reuse, recycling of materials and packaging; use of standardised components to facilitate their reuse; green design; risk prevention systems to cover possible environmental accidents and catastrophes; (3) recognition of positive environmental behaviour: obtaining ISO 14001 environmental certificates; integrating the overall quality of environmental management (TQEM) into planning and operational processes; implementing an environmental management system (EMS); green innovations. Customers (1) Environmental cooperation with customers; Cooperation with customers in designing ecological and cleaner production; Working with customers to change product specifications; (2) Applying environmentally friendly practices with customers; Route planning for vehicles with reduced environmental impact; Customers return original packaging or pallet systems; Environmentally friendly packaging (green packaging); Using environmentally friendly transport; Formal policy for green logistics / transport; Return logistics, ecological labels. The practices used in this area are illustrated in Figure 2.



Source: own elaboration

Figure 2 Green supply chain management practices

The model approach to the supply chain in the context of its greening is presented in Figure 3. When building a reference model, one should implement a strategy of greening the processes in practically each of its links. Both from the point of view of logistics and other activities accompanying the processes, starting from product planning, through its production and delivery to the consumer. Consumer actions should also be pro-environmental in nature, but this is largely determined by the environmental awareness of the buyers themselves. This model should also be accompanied by return processes, which are an element with a positive impact on the natural environment, eliminating a large percentage of waste, contributing to the reuse of already used elements and their return to the economy.



Source: own elaboration.

Figure 3 Reference model of green supply chain

**3. DELIMITATION AND CONCLUSIONS**

The presented considerations have limitations. Firstly, they refer only to a theoretical model that has not yet been verified in economic practice. It is based on the literature on the subject and is intended to contribute to further consideration of the possibility of evaluating the functioning of the green supply chain. In summary, it should be stated that when analysing both the benefits and the barriers to implementing a new business model such as the green supply chain, it is necessary to analyse in depth the existing factors in order to highlight the positive ones and eliminate those that are negative. Developing a green supply chain strategy does not seem to be a difficult task but implementing it into business practice is a major challenge. It requires not only the involvement of

leaders, but also the awareness of all stakeholders (including the consumer, which in many cases is very difficult) that the undertaken actions will bring effects not only in the form of economic profits, but also social and environmental benefits not only for the participants of the chain, but also for future generations.

Today's sustainable trends are the future and one of the directions for the development of supply chains. Model solutions in this area should be adapted to different sectors of the economy and extended at the level of all links. Models, schemes or descriptions of concepts may contribute to the creation of not only new solutions, but also become a determinant of the development of innovative business.

## REFERENCES

- Baojuan S.H.I., *Green supply chain management and implementing strategy*. International Conference on Logistics Engineering and Supply Chain, p 85.
- Dashore, K., & Sohani, N. (2008). *Green supply chain management: A hierarchical framework for barriers*. Journal of Sustainable Development (Vol. 5), 5, 2011.
- Handfield, R. B., Walton, S. V., Seegers, L. K., & Melnyk, S. A. (1997). 'Green' value chain practices in the furniture industry. *Journal of Operations Management*, 15(4), 293-315.
- Jayant, A., & Azhar, M. (2014). *Analysis of the barriers for implementing green supply chain management (GSCM) practices: an interpretive structural modeling (ISM) Approach*. *Procedia Engineering*, 97, 2157-2166,
- Kardas M., *Pojęcia i typy modeli biznesu*, w: Klineciewicz, K. (red.) (2016). *Zarządzanie, organizacje i organizowanie – przegląd perspektyw teoretycznych*. Warszawa: Wydawnictwo Naukowe Wydziału Zarządzania Uniwersytetu Warszawskiego, <http://timo.wz.uw.edu.pl/zoo>, za: Morris, M., Schindehutte, M., Allen, J. (2005). The entrepreneur's business model: toward a unified perspective. *Journal of Business Research*, 58, 726–735. (727)
- Kronenberg, J., Bergier, T., (2010). *Wyzwania zrównoważonego rozwoju w Polsce*. Fundacja Sendzimira, s. 182.
- Luthra, S., Kumar, V., Kumar, S., & Haleem, A. (2011). *Barriers to implement green supply chain management in automobile industry using interpretive structural modeling technique: An Indian perspective*. *Journal of Industrial Engineering and Management*, 4(2), 231-257.
- Magretta, J. (2002). Why business models matter? *Harvard Business Review*, 80(5), 86–92.
- Morris M., Schindehutte M, & Allen J., *The entrepreneur's business model: Toward a unified perspective*. "Journal of Business Research" 2005, 58, pp. 726-35.
- Niemann, W., Kotze, T., & Adamo, F. (2016). *Drivers and barriers of green supply chain management implementation in the Mozambican manufacturing industry*. *Journal of Contemporary Management*, 13(1), 977-1013
- Oblój, K. (2010). *Pasja i dyscyplina strategii: jak z marzeń i decyzji zbudować sukces firmy*. Wydawnictwo Poltext. Rehman & Shrivastava, 2011
- Seuring, S., & Müller, M. (2008). *From a literature review to a conceptual framework for sustainable supply chain management*. *Journal of cleaner production*, 16(15), 1699-1710.
- Slywotzky, A.J., Morisson, D.J., Andelman, B. (2000). *Strefa zysku*. Warszawa: PWE.
- Smith, M., & Crotty, J. (2008). *Environmental regulation and innovation driving ecological design in the UK automotive industry*. *Business Strategy and the Environment*, 17(6), 341-349.
- Srivastava, S. K. (2008). *Network design for reverse logistics*. *Omega*, 36(4), 535–548. <https://doi.org/10.1016/j.omega.2006.11.012>
- Stabell, C.B., Fjeldstad Ø.D. (2005). *Configuring value for competitive advantage: on chains, on shops, and networks*. *Strategic Management Journal*, 19, 413–437. (420-421)
- Teece, D. J. (2010). *Business models, business strategy and innovation*. *Long range planning*, 43(2), 172-194.
- Thun, J. H., & Müller, A. (2010). *An empirical analysis of green supply chain management in the German automotive industry*. *Business strategy and the environment*, 19(2), 119-132.

Tundys B. (2016), *Źródła przewagi konkurencyjnej zielonego łańcucha dostaw – analiza kluczowych czynników – Zarządzanie łańcuchem dostaw w XXI wieku, w poszukiwaniu nowych źródeł przewagi konkurencyjnej*, red. naukowa, K. Rutkowski, wyd SGH 2016, s. 73-92

Van Hoek, R. I. (1999). *From reversed logistics to green supply chains*. Supply Chain Management: An International Journal, 4(3), 129-135. (134)

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.,

Zhu, Q., & Sarkis, J. (2007). *The moderating effects of institutional pressures on emergent green supply chain practices and performance*. International Journal of Production Research, 45(18-19), 4333-4355. <https://doi.org/10.1080/00207540701440345>

