

Chapter 28

Green Supply Chain Method in Healthcare Institutions

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Abstract Social and environmental problems arisen with economical and technological development sometimes lead a chaos especially in healthcare industry. The current complexity of healthcare services increased in parallel with the increase of environmental awareness and scarcity in healthcare resources. Green supply chain management is defined as a process consisted of green purchasing, green manufacturing/material management, green distribution/marketing and reverse logistic process. Green supply chain management practices are mostly common in the United States when we look around the world. When we consider Turkey, on the other hand, we can say that green management approach has recently started to be recognized and practiced. In Turkey, two hospitals has focused on this topic so far: “İstanbul Florence Nightingale Hospital” and “Medistate Kavacık Hospital”. In parallel with the proliferation of green hospital concept, there will be a possible increase in the practices related to green supply chain management in Turkey. With this study, it is aimed to draw attention to green supply chain, an environmentalist approach in the supply chain management of healthcare institutions and to raise awareness in managers of health institutions.

Keywords Green supply chain method • Healthcare • Healthcare institutions • Chaos

28.1 Introduction

With the acceleration of globalization, both social and environmental problems have arisen in parallel with economical and technological development. Sometimes it leads a chaos especially for healthcare industry. For this reason, in accordance

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with the increase of environmental awareness in different sectors, management approaches for environmental health have been adopted. With this approach named as green management, companies highly focus on creating environmental values and perform their work according to them. Supply chain management, integration of cash, information and material flow that enables the correct product to get through with minimum price in correct time and place, has become a field in which environmental practices are carried out.

As part of the environmental awareness approach, the process, enabling to minimize negative environmental effects of supply chain management and determine the activities as to use optimum source and to reduce complexity, is defined as “Green Supply Chain Management” [21, p. 44]. In hospitals, it is known that energy and water consumption is intense, chemical and nonchemical waste amount is too much, potentially dangerous substance output is high, and materials bought are various and plentiful also tends to be chaotic [30, p. 38]. Therefore, they should successfully perform the supply activities in order to provide an effective and fruitful health service. Adopting an environmentally friendly and environmentally conscious approach when performing supply activities is only possible with gaining an understanding of green supply chain management.

In this study, supply chain management and green supply chain management are mentioned and examples related to their implementations in health institutions are given. In line with environmental responsibility, it is aimed to create awareness in healthcare managers in subjects of green approaches of supply chain management.

28.2 Green Management

Global climate change, developing technology, a more conscious society, act of sustainable development, social responsibility projects, economical changes and legal obligations play a big role on both production and service corporations to develop environmental approaches. It also encourages managers to struggle for being a green management. Resulting from the rising awareness in environmental issues, institutional environmentalism or green management understanding has become a quite popular concept and an important way to cope with complexity and chaos in this area [6, p. 2, 2, p. 489].

Green management is a process of planning, organizing, directing and controlling organizational activities with an environmental perspective in order to protect the environment and create an environmentally-friendly organization [1, p. 105]. In other words, green management involves buying materials that can be recyclable, reusable or that have just been recycled; choosing the supplier conforming with the environmental aims; providing savings in using all types of sources; supplying products that make sourcing fruitful; by management’s making environmentalist decisions; using materials, equipment and devices which do not contain hazardous material; reducing the waste materials; creating reuse or recycle opportunities; making environmental planning, attaching importance to the use of recyclable

energy sources; and developing activities that improve environmentalist perspective to create ecological value [20, p. 2240].

Green Management aims to make society to which they render service with activities supporting health and healthy life sustainable [27]. Green management, a new approach for environment management system, is a process that comprise reformation aimed at environmental health [30, p. 41].

Green businesses that have adopted green management practice desire to be the creators of the ecological life quality. With this aim, the first step is generally to prevent the environmental pollution and the second step is to provide savings in all kinds of sourcing and to tend towards the renewable sources [11, pp. 191–198]. When businesses aim at increasing their productivity, profitability and market share; strengthening their competitive position and decreasing their cost; they also want to raise awareness and create a green image in society in order to protect sustainable development and ecosystem by minimizing their negative effect on the environment [15, p. 1175], Porterve van der Linde [22]).

28.3 Supply Chain Management

Supply chain is defined as a cluster of factors in which suppliers, logistic service suppliers, producers, distributors and retailers are included and among which there are constituents such as material, product and information flow [16, p. 226]. According to another definition, supply chain is an integrated process constituted by various companies such as suppliers, producers, distributors, retailers, etc with an aim of supplying raw material, making them into products and distributing these products to the retailers and ultimate users [4, p. 281, 10, p. 89].

Supply chain management is, on the other hand, the management of material/product, money and information between supplier, producer, distributor, retailer and customer, all of which are included in the value chain so that goods can get through to the customers from the raw material supply to production and distribution [9, p. 3, 19, p. 89]. Supply chain management is also defined the integration of the main work processes that provide product, service and information from supplier to the ultimate customer [18, p. 2].

Basically, supply chain comprises company, suppliers of the company and its customers. In extended supply chain, however, there is a supplier of the supplier or an ultimate supplier at the beginning, and there is a customer of the customer or an ultimate customer at the end in addition to this framework. Finally, there are some service provider companies that render service to all of the companies in supply chain (Fig. 28.1).

Main goals of Supply Chain Management can be explained as in the following [19, p. 89]:

- To increase the customer satisfaction,
- To decrease the cycle time,

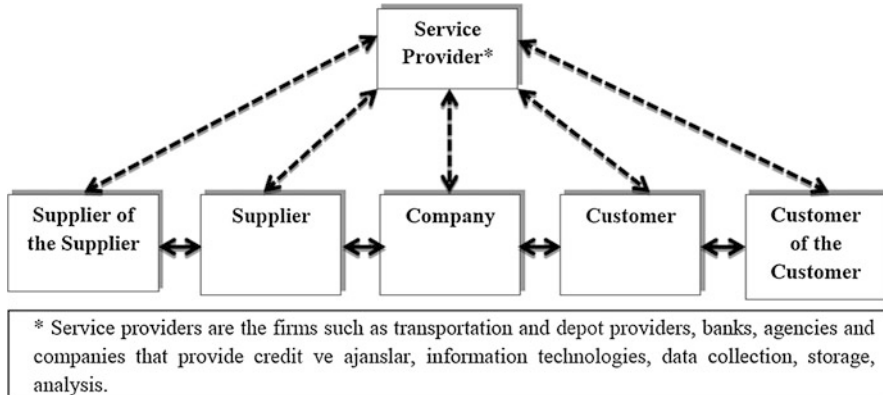


Fig. 28.1 Extended structure of supply chain (Source: Hugos [14, p. 27])

- To ensure that storage costs and costs related to storage are decreased,
- To decrease the product defects
- To decrease the activity cost

When the historical development of supply chain is analyzed, it is apparent that its emergence dates back 1960s. Physical distribution process, the first stage of supply chain management, was first mentioned by Bowersox. After the introduction of material requirements planning in 1970s, managers understood the importance of cost, quality, and delivery of the product on time; and they adopted an integrative approach. With an increase of global competition, companies switch to the second process of supply chain management, the logistics stage; and Houlian became the first person to use the term “supply chain” for this system by connecting the strategical decisions of the company and logistic facility [19, pp. 89–90]. Especially starting from the late 1990s, supply chain management became very important in both academic and business life. Units with the name of supply chain were constituted in big companies in early 2000s [25, p. 58].

Although supply chain management has a great number of advantages when it is carried out efficiently, there are many difficulties and barriers in practice. Barriers that occur in supply chain practice, difficulties encountered and the advantages that are as follows [12, p. 37]:

Forces Driving Supply Chain Collaboration

- More demanding customers
- Increasing competition
- Economic globalization
- Closer collaboration relations
- Less product life cycle
- Need for better information
- New information technologies

Implementation Barriers to an Effective Supply Chain Management

- Lack of top management support
- Not-aligned strategical and operational ideas
- Inability or unwillingness to share information
- Lack of confidence among the members of supply chain
- Inflexible organizational systems and processes
- Resisting change
- Inconsistent/insufficient performance grades
- Lack of education for new ideas and skills

Benefits of Effective Supply Chain Management

- Unique product and services
- Faster research and development activities
- Quality of Supplier
- Shorter order cycle
- Flexibility in meeting the demands of the customer
- Increasing cash-to cash velocity
- Better asset management

28.4 Green Supply Chain Management

With an effect of globalization, companies adopt reformist approaches in every stage of their activities in order to gain a competitive and sustainable edge. Nowadays, especially in the last few years, approaches for environmental awareness, which have become more and more common as the environmental pollution increases, are reflected to business activities, as well. By adopting green management with an environmentalist understanding, companies not only contribute to green management, but also discharge their social duties. Green management approaches directed companies to green supply chain management practices by being integrated to their supply management processes.

Green supply chain management is defined as a process consisted of green purchasing, green manufacturing/material management, green distribution/marketing and reverse logistic process [13, p. 334]. According to another definition, it is a method laying out supply chain that combines production process with recycling and remanufacturing [24, p. 285]. Green supply chain management is also described as integrating environmentalist approach to supply chain management in the way that it involves product design, material supply and selection, manufacturing processes, delivering the product to the customer and management of product life curve [26, pp. 54–55].

Components of green supply chain management are as follows [17, pp. 21–35]:

- *Green Purchasing*: Green purchasing decisions are the acts of buying materials that are recyclable, reusable or just recycled.

- *Green Production*: It involves a range of activities such as green production, reuse, reproduction and recycling.
- *Green Distribution*: Selection of distribution chain and storage points, administering routes, identifying which method will be used for transportation, coordination of prospective and retrospective activities and handling them in this context.
- *Green Packaging*: Having environmental awareness in packaging activities and using environment friendly and recyclable materials.
- *Reverse Logistics*: It involves a range of new activities such as exchange, return, repair, maintenance, remarketing and placement. It is the act of product transportation from the consumer to reprocessing or recycling centers.

28.5 Green Supply Chain Management in Health Institutions

Supply chain management in the sense of health sector is defined as an integrated system that manages flow of the product and information in order to provide the transaction of work processes beginning from the production to the delivery to the patients in harmony [29, p. 25]. Supply chain structure in health services is as follows in the Fig. 28.2.

Some reasons make it necessary to redesign the processes in health system. The aim of redesigning the processes in health institutions is to produce alternatives to sourcing by the help of “green” concept; to encourage the use of energy, water, and material more efficiently and effectively; to avoid all kinds of waste, to design environmentally-conscious and environmentally-friendly buildings [30, p. 38].

Green practices in supply chain take effect in all processes by giving particular importance to customer satisfaction. It is a system in which environmental aspect is added to supply chain with some studies that increase the life quality of the society such as developing environmentally-friendly product, giving opportunity to recycling, using the sources efficiently, etc. [3, p. 64]. Supply system in hospitals determines reliable stock management, regular material supply, speed and quality of maintenance and service process in terms of the communication of suppliers [31].

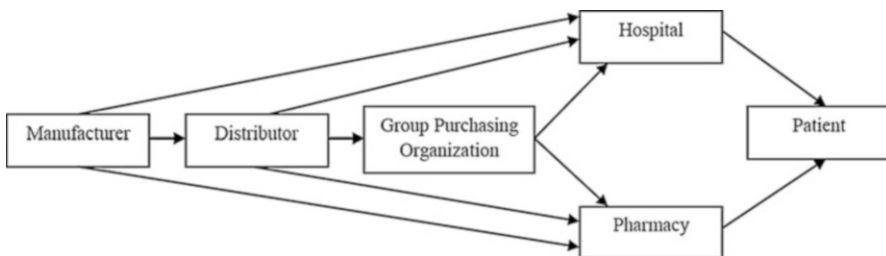


Fig. 28.2 Supply chain structure in health services (Source: Chakraborty and Zanjurne [8])

By means of adopting green management strategies; health institutions can improve supply processes and their consequences; reduce the cost thanks to the supply of reusable or recyclable products and protect the health of the environment.

Activities related to green supply management devoted to protecting the sources which are limited to reuse or recycle activities are as follows [5, 7, 23]:

- Among the important issues in Boulder Community Foothills Hospital, America are encouraging and supporting recycle of the equipment that are not used; reducing the waste materials and throwing them in a safe way; purchasing the recyclable and reusable products that include materials which give the least harm to the environment. Cleaning, disinfection, sterilization and recycle of most things such as alcohol, battery, bulb, paper, cardboard, paperboard, materials related to X-ray, old bedclothes, newspapers, etc.; and reuse of some materials such as materials used in the department of surgery, all types of packaging materials, wheel chair, crutch, print cartridge are enabled within the hospital. What is more, mercury free thermometer, blood pressure indicators, and energy saving bulbs are used.
- A cardiovascular and pediatric diseases center in America reduced the waste blood by 22 % with the help of recycling and reusing practices.
- A hospital in America confirmed that they made a profit of 30 euro per bed by enabling the recycle of every kind of materials such as bulbs and x-ray films.
- Kem Gardner, a supply chain center which operates within the body of Inter-mountain Health Center in America, provides medical material to numerous health institution. By using reusable packaging materials in packaging processes, this center achieved a reduction of waste materials by 20 %. Furthermore, the products and the packaging materials in the relevant center achieved saving in the storage place.
- A research was conducted to find a sustainable solution for polystyrene coolers by the complaints and demands of the patients. As a result of this research, a recyclable and cost-efficient alternative product was determined. Thanks to this green practice in supply chain management, there was a decrease in the number of waste materials and costs.

As seen in the examples, when deciding the products to use in hospitals, some points which are taken into consideration are sustainability, content, disposal requirements, package of the materials; and effect of them on the patient and personnel. Therefore, hospitals are adopting a more environmentalist purchasing policy.

Green supply chain management practices are mostly common in the United States when we look around the world. When we consider Turkey, on the other hand, we can say that green management approach has recently started to be recognized and practiced. In Turkey, two hospitals have focused on this topic so far: “*İstanbul Florence Nightingale Hospital*” and “*Medistate Kavacık Hospital*”. In parallel with the proliferation of green hospital concept, there will be a possible increase in the practices related to green supply chain management in Turkey.

28.6 Conclusion and Recommendation

Supply chain involves all the processes including supply, manufacturing, shipping, storing, sale and services after sale [28, p. 243]. Green supply chain management can be defined as adopting environmentalist management principles in all the processes between enterprises which are the members of supply chain and institution activities.

Health institutions have an important role in terms of protecting environment and public health by adopting environmentalist approaches in all of the stages of supply chain. This approach, at the same time, has a process that reduces the costs and increases patient satisfaction for a continuous improvement.

With this study, it is aimed to draw attention to green supply chain, an environmentalist approach in the supply chain management of health institutions and to raise awareness in managers of health institutions. Within this framework, it can be recommended for managers of health institutions to apply environmentally-friendly green strategies to supply chain management; to develop purchasing strategies intended for environmental health; to adopt environmental policy in waste management; to raise the awareness of personnel about environmentalist approaches; and to provide them with in-service training.

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