IMPORTANCE OF GREEN LOGISTICS FOR COMPANIES

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ABSTRACT

The aim of the study is to examine the development from logistics to green logistics and how future goals change. By the subject of the research, it has been examined whether companies are aware of the current situation of our environment. It also summarized many important measures for how companies can improve the efficiency of transport and how to create more environmentally friendly logistics. Previous studies have indicated that globalization and transport have a very negative impact on our environment due to CO2 emissions. The results of these surveys support the assumption that companies want to move to the green supply chain. Furthermore, the literature on green logistics has revealed various reasons for the inevitable implementation. As a result of the study, it has been determined that green logistics will play an important role in the future as all companies are interested in sustainability.

Keywords: Green Logistics, Supply Chain Management, Logistics in Businesses.

INTRODUCTION

In logistics, the application of targets is given as economic priority as possible. However, logistics can follow the ecological and social goals (Vahrenkamp and Kotzab, 2012). Therefore, in recent years, especially in the field of environmentally friendly development has occured, that is, green logistics.

The main objective of green logistics is generally seen as the efficient use of energy. Enhanced technologies or optimization of existing processes play an important role here. Yet, there should be no loss of performance due to these changes. All green logistics measures are expected to perform the same. The primary objective of the measures is to reduce emissions. This will significantly reduce the carbon dioxide released during production and transportation. This will be a factor in the reduction of air pollution, parallel to the transport logistics, the environment will be respected. There are also voluntary and reluctant reasons for the transition to green logistics. There is a company image improvement among volunteers. Companies use this as a competitive advantage compared to other companies in the same sector (Sadowski, 2010).

There are many customers and companies that make their purchasing decisions according to their environmental friendship (Vahrenkamp and Kotzab 2012). One of the reluctant reasons for the implementation of environmental measures is the legal requirements. Many companies have fulfilled legal requirements and redesigned their processes to avoid punishment. On the other hand, in parallel with the successful implementation of environment-friendly measures, the company has brought about strategic, operational changes and technical advances in its operation, which has also contributed significantly to the development of companies.

Logistics Term

In order for the change to green logistics to be clearly visible and precise, it is necessary, at the outset, to define in detail the concept of logistics. The origin of the term logistics comes from two languages. On the one hand; the Greek term lego (think) and the Latin logica (logic) and the other on the French logement (accomodation). The relationship between these terms and the term logistics is clearly seen (Kummer, 2009).

The term logistic was first used in the military sector in the 19th century, based on the French word for logement (Arnold, 2008).

Today, logistics is seen as a very flexible term. This means the supply and distribution and use of physical goods, things and real goods. This also includes storage time between the delivery of goods (Pfohl, 2010).

When it comes to logistics, it should be noted that communication is best realized during the logistics processes and that the entire logistics network as a whole is understood. Today's technologies further support logistics services, making planning, control and observation become easy and manageable (Arnold, 2008).

Definition of Green Logistics

Green Logistics is a sustainable and systematic process for capturing and reducing resource consumption and emissions from transportation and logistics processes between companies and companies (International Transportation 2010).The term " green logistics " has evolved over the past few years and has only recently been the focus of attention. In addition to the social and social requirements for which logistics is subject, there is a search for maintainability. Therefore, protecting the environment is more important than ever and therefore sustainability should be taken into consideration. It is vital to make the existing logistics more protective. The protection applies to all sources, as there are alternatives that are less harmful to our environment (Çetinkaya 2008).

Importance of Green Logistics in Companies

In most companies, the main objective of logistics is to make a profit. Social and environmental targets have not been taken into consideration so far (McKinnon 2010). However, due to the increasing oh green logistics), companies now consider this aspect of logistics seriously (Straube, Pfohl 2008, 6). In recent years, companies have had to make their logistics activities more environmentally friendly due to increased pressure (McKinnon, 2010). In the meantime, shareholders - customers, suppliers and government - require companies to confront the current environment and resource situation (Straube and Pfohl, 2008).

Today, due to industrialization, CO2 emissions have increased gradually and are 30% more than before. One of the factors contributing to this increase is the forestry of the industry for land use. The actual scope of climate change has emerged in recent years with new scientific research methods (McKinnon 2010). Some predictions indicate that CO2 emissions will double over the next 100 years if companies do not take measures (Houghton, 2004).

Changings of Companies with Green Logistics

For a long time companies have recognized that in general they need to take some measures to ensure both logistics and more environmentally friendly transport. These measures are related to logistics, transportation, storage, vehicles and information technologies. First of all,

strategic and operational areas must be adapted. There is a great potential for savings not yet sufficiently utilized by companies. There are many possibilities in this area to make logistics " greener ". Technical measures should be taken to ensure that changes in strategic and operational areas are implemented more efficiently in the future. These measures should be carried out together. Otherwise, the actions of companies will not be sustainable. During these developments, a significant change in the entire supply chain can be seen. The road to this basic development is very long, but in the long term it is a profit (Sadowski 2010).

Strategical and Operational Precautions

As mentioned above, it is important to start with these strategic and operational areas. These fields will provide optimization of the fuel-saving saving potential. With these measures, the vehicle's driving style will be optimized so that the environmental impact will be kept as low as possible. With a proper planning in parallel, transportation will be transformed into more environmentally friendly, so that the goods will reach the desired place at the right time as the customer wants (Sadowski, 2010).

Transporters are the major integrators who take the goods from the customer and deliver them to the buyer. These integrators are required to select the most suitable means of transport for delivery (Vahrenkamp and Kotzab 2012).

The possible vehicles for the transportation of goods are as in the following: (Schulte, 2005):

- Trucking
- Railroad Transportation
- Combination of Transportation Vehicles
- Ship
- Airway

Trucking

The most widely used transportation vehicle is truck. Experts say that the driver has a lot of potential for development in driving technology (Sadowski, 2010). The truck is quite popular as a transport vehicle, because the road network in Europe has been developed and therefore each destination is easier to transport than any other means of transport (Schulte, 2005).

Simple measures such as lowering the highest speed, early gear shifting or predictive driving can save fuel. Reducing load weight also has a positive effect on fuel consumption (Wittenbrink, 2010). Even if all these measures lead to a lower transport speed, this is sufficient to save 5 to 10% of fuel consumption (Sadowski, 2010).

It is also possible to transfer transport to more environmentally friendly transport vehicles and thus save money. Transport vehicles such as rail transport or ships produce much less CO2 emissions than a truck (Sadowski, 2010). In addition, railway traffic is much less affected by the weather and is therefore considered more reliable in bad weather conditions. Also, the capacity of a truck is limited in certain countries with specific weight limitations and truck size (Schulte, 2012).

Railroad Transportation

Railroad transport is a good alternative for road transport and contributes greatly to reducing CO2 emissions (Sadowski, 2010).

It is also clear that companies are interested in switching to the railway but very few are connected to the railway network. There is interest in the current, but also in need of an action. Expansion of the railway network can be very costly. Therefore, the transporters criticize that there is little flexibility in this means of transport and is based on an existing railway network. In addition, transportation costs are relatively high in small quantities (Wittenbrink, 2010).

Rail transport is therefore the only means of transport without a distinct quality feature. Road transport is considered very flexible and inexpensive. Shipping freight has a great cost advantage over other transportation vehicles and air transport is considered extremely fast. Still, there is a tendency for companies to combine rail transport with trucks because they want more conscious transport (Pfohl, 2010).

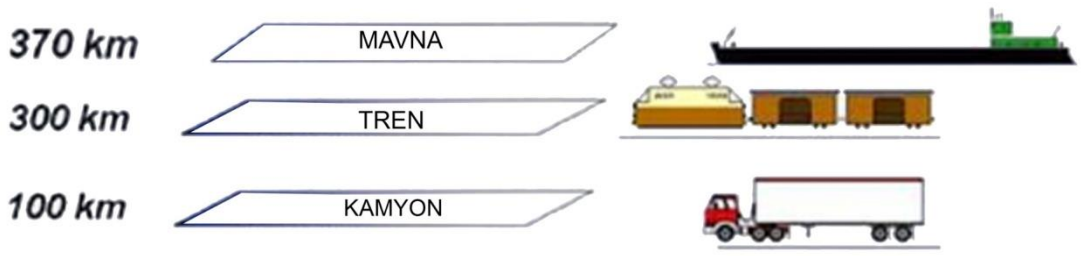
Combined Transportation

There are usually two or more trasnportation vehicles when transporting goods shipped internationally. There are two types of transport at in this style; broken and combined transportation. Broken traffic is the fact that the goods are not transported in fixed load units. In the combined transport, there are fixed loading units and they are re-loaded to other means of transport and require little expense (Schulte, 2005).

Ship

Ship transportation is more efficient than railway transportation with the same energy consumption and thus it is the most environmentally friendly in comparison. The transportation range of trucks, trains and barges is very different in the same amount of energy consumption, and the graph below shows the success of the barge in energy consumption (Sadowski, 2010).

Figure 1: At the same energy consumption Comparison of arrival ranges of truck, train and barges



Source: Federal Waterways and Ship Traffic Administration (WSV) 2009

In addition, since the cost of ship transport is cheaper than the train, it is more economically important to carry a large amount of cargo (Schulte, 2005). As in rail transport, a disadvantage of ship transport is low flexibility. Here you are dependent on the existing waterways and if necessary, you can only make the final delivery using a combination with another transport vehicle (Pfohl, 2010).

Airway

Airway transport is considered to be the most polluting vehicle, because the transport of the cargo takes place in the air, as its name suggests. CO2 emissions in the air are much higher than those in traffic. However, it should be noted that because of globalization, goods are required to be delivered as soon as possible, the only option is air cargoes (Sadowski, 2010).
Besides this, air transport is used for its reliable aspect. In addition, relatively little effort is made for the packaging. At this point, costs are reduced (Vahrenkamp and Kotzab, 2012). A criticism point in air traffic is low flexibility, because flight times are fixed, and therefore short-term scheduled flights are very expensive (Schulte, 2005).

Software Enhancements

Current and new software that supports transport planning can identify more efficient transport routes that are more environmentally friendly. Switching to these routes saves CO2 and fuel costs. Transport planning software is very important in planning new routes for a company (McKinnon, 2010). In addition to the ideal and shortest transportation route, these programs also show CO2 consumption. The result should be automatically compared with the other means of transportation. Therefore, there should be the best possible choice of transportation and transportation routes available. This software should also be able to calculate the correct loading and use of the means of transport (Sadowski, 2010).

The aim of the new software solutions is to accelerate the entire process and prevent irregular data collection. In addition, the use of software solutions creates a small portion of the change of green logistics, but it has a lot of impact on savings (McKinnon, 2010).

As a result of the updating and transformation into new programs, employees should be continuously trained and thus the correct and effective use of the software should be ensured (Vahrenkamp and Kotzab, 2012).

Technological Precautions

For an efficient application of above mentioned strategic and operational measures, the green logistics technology must be adapted and improved adequately enough.
The criticized thing in the renewal of technologies is the first investment costs are high. When used correctly, these costs can be successfully met in a very short time (Sadowski, 2010).

Trucking

The most damaging consequences of truck transport to the environment are CO2 emissions. Therefore, it is important to save fuel. This is usually done with vehicle technology measures. In this context, fuel savings can be up to 15% in the first use. Among these vehicle measures are automatic transmissions, automatic start-stop, fuel saving with hybrid or alternative fuels (Wittenbrink, 2010).

Ship

The focus in ship transport is firstly on innovation in wind energy. Companies are trying to develop a kind of sail for ships to the ocean. Thanks to a new, more modern sail, 5-fold performance per square meter is possible. These ships will continue to be equipped with motors, but they should only be used in emergency situations (Sadowski, 2010).

Eco-friendly Buildings

Logistics not only aims to protect the environment during transportation but also tries to make its buildings more energy efficient. Solar, wind, water or geothermal energy is not available anywhere at all times, and therefore the most energy in the current location should be discussed. There are also environmentally friendly alternatives which can be used without restriction in terms of heating, insulation or lighting (Sadowski, 2010).

Green logistics and environmental protection measures are implemented by many well-known companies. These companies include Hermes and DB Schenker. They try to act in an environmentally friendly way and achieve the goals they want to achieve with their employees.

Hermes

Hermes has been serving its customers since 1972. The company started to be recognized with its package delivery, and today, the company extends its work areas and serves its customers throughout the entire supply chain.

Since Hermes is aware of the high CO2 emissions in the transport sector, the company has set its target to reduce emissions by 30% by 2020. It wants to reduce greenhouse gas emissions by 50% by 2020 by more sustainable studies (Hermes GmbH, 2013).

Hermes's way to success is the continuous modernization of its vehicles. Alternative drive systems such as hybrid vehicles or electric cars are used in daily life. However, in order to avoid too much time in international transport, the aircraft is used only in extremely emergency situations. Hermes, however, is generally successful in combined transport with trucks and ships. Route planning software is also available in Hermes. The vehicles are equipped with their own navigation devices that continuously calculate the most suitable route for transport (Hermes GmbH, 2013).

In new units, it tries to use solar energy as a source of electricity with alternatives such as biomass. In the future, they will also focus on expanding recycling and renewable resources in Hermes' catalog of precautions (Hermes GmbH, 2013)

DB Schenker

DB Schenker is known as a worldwide logistics service provider and brings transportation in all sectors. However, DB Schenker extends its field of activity and provides its customers with multidimensional support throughout the entire supply chain (DB, 2013).

DB Schenker evaluated the DB2020 strategy for green logistics, since it is known that the transport service provider has become increasingly threatening with the increase of pollutant emissions of climate change. In the frame of this strategy, CO2 emissions are planned to be reduced by 20% by 2020 (DB 2013). In addition to emissions, the use of different energy sources for transportation vehicles is also targeted (DB 2013).

DB Schenker has set ownself the target of becoming the environmental pioneer in the logistics sector in the future. The Company continuously strives to develop new measures for transport and logistics. Maktad Green logistics çevre is always available in the logistics sector and therefore companies are increasingly focusing on environmental protection. (DB, 2013).

Role of the Government in Green Logistics

The strategic, operational and technological measures across the supply chain for transformation into the green logistics mentioned in the previous chapters are very time-consuming and difficult for companies to implement. At this point; the government has a great interest in environmental protection and wants to significantly reduce CO2 emissions. The purpose of the government is to create a green environment that promises a better quality of life for citizens (McKinnon, 2010).

Precautions Catalogue of the Government

Each government creates its own catalog of measures for transition to green logistics. They are very similar to each other and can be divided into the following categories: (McKinnon, 2010):

- Taxing
- Financial Promotions
- Regulations
- Libelralization
- Substructure and Structure Plans
- Advice and Warnings

Taxation includes fuel taxes, excise duties and charges for road use of a country (McKinnon, 2010).

Financial incentives are also offered in various ways. It is supported by the government through the purchase of new means of transport with lower CO2 emissions or the transition to more environmentally-friendly warehouses. The By-Laws mainly determine the minimum requirements and equipment of each means of transport. These must be fulfilled in order for them to continue shipping (McKinnon, 2010).

The liberalization of the transport sector gave companies the opportunity to provide more economic and environmental benefits. Transport companies are often given more freedom in reloading or customs duties. In the last category, the government acts as a supporter. They advise companies on the extent to which they can make changes in the transport sector to fully concentrate on green logistics (McKinnon, 2010).

The aim of this study is to provide the best possible and detailed answers to the above-mentioned guidance questions. First of all, it is important to correctly define the concept of green logistics for this study and to focus on the fundamental importance for companies.
However, companies will have full benefit of the benefits of green logistics. The application of these measures is always associated with a well-thought-out practice, as the use of advanced technologies brings along some requirements, such as sufficient budget.

RESULT AND SUGGESTIONS

This research clearly demonstrates how the development of a new type of logistics can affect the entire sector. These changes affect not only the logistics service providers, but also the shareholders. First of all, since climate change has a negative impact on the environment, logistics services are made more environmentally friendly.

In strategic, operative and technological fields, variable directions arise. Measures should be taken to make the process more ecological. Transport planning is essential and the right means of transport that are ideal for the intended use should be selected. If required, combinations of different means of transport should be used in this area. All of these should be controlled by specific planning programs which should support the planning of ideal transport.

Green logistics aims to transform the supply chain into a green supply chain. It should be eco-friendly not only in transport in our own company but also in stages from the removal of the product by last user.

Application of eco-friendly measures occurs for different reasons for most companies. Companies are looking for both economic and ecological objectives.

Green logistics has a positive effect on customers' purchasing behavior. The study clearly shows that most companies only apply the green supply chain because of legal obligations. Only a small number of companies implement the green supply chain as they want to improve their image.

In any case, applications provide advantages to companies. When a company spends less energy, not only emissions, but also energy costs are reduced. As soon as a company decides to produce more environmentally friendly, it should make investments. Yet, these investments will pay for themselves in every situation because the changes give thier profits in the long term.

Green logistics is a long-term change in logistics and should therefore be regarded as a serious issue by entrepreneurs. Because of the progressing climate change, it is important to address this issue and take action as soon as possible. Companies that will not be aware of green logistics in their supply chains in the future will be ignored by environmentally sensitive buyers and thus suffer losses. In order to remain in competition, it is necessary to adapt to the future situation and to be ready for change at any time.

Since green logistics is seen as a long-term trend, it is important that companies adhere to it. Those who will not participate will be in a long-term competitive disadvantage. It is also important that shipping companies stay up to date and continuously improve their supply chains. Sooner or later, the climate balance sheets will be decisive for the acquisition of more customers.

Consequently, transportation in the frame of green logistics should be made more efficient. Technological measures should also be kept up to date. Alternative vehicle drive options or greater transportability can contribute to decreasing CO2.

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