



Małgorzata Jaročka

*Chair of Economics and Management of Transportation Companies, Faculty of Economics,
University of Gdańsk, Poland*

COMPETITIVENESS OF ROAD TRANSPORT COMPANIES IN LIGHT OF ECOLOGICAL DETERMINANTS IN POLAND

Abstract

Creating competitive advantage comes down to use of many different factors, the importance of which depends on both the market situation and the characteristics of the enterprises. Ecological factors are becoming an important aspect of creating a competitive advantage of transport enterprises in Poland. The subject of the article is to present the creation of a competitive advantage of road transport enterprises in Poland through the implementation of pro-ecological activities. Programs and plans for supporting environmentally friendly solutions in road transport companies in Poland are based on the observation of foreign markets exhibiting effective activities in the field of ecological transport.

Keywords: transport enterprises, transport economics, competitive advantage, ecological conditions

Introduction

The subject of the ecology is discussed in many areas, including the transport activity. The need to minimise the negative environmental impact of the transport means that the transport companies have to introduce proecological solutions. Transport companies often not only follow the legal regulations on ecology, but also, due to an increasing ecological conscience of the employees, introduce voluntary proecological actions. The ecological factors have thus become an important aspect of competitiveness creation of Polish transport companies.

The goal of the article is to present both the obligatory (through legal regulations and programmes) and voluntary ecological actions and assess their impact on the competitiveness of transport companies based on international guidelines.

1. Competitiveness creation of transport companies

Competition is the main economic mechanism of a market economy. It implies a rivalry on sources of supply of production resources, work capital and customer markets. Competitive companies focus on reaching the market and increasing their share (Brodowska-Szewczuk, 2009, p. 88). Competitiveness is a characteristic meaning the ability of entities, industries, regions, nations or international organisations to face competition while achieving a high return rate on used resources and a high employment based on solid foundations (Stankiewicz, 2005, p. 36).

There are two types of competitiveness: static and dynamic. The static competitiveness is the ability of an enterprise to generate profit on its activity. The dynamic competitiveness is the ability to at least upkeep the current level of competitiveness (Grzebyk, Kryński, 2011, p. 112).

The competitiveness position is defined as a multidimensional category, which describes a number of factors, e.g. the market share, the market impact, the used technologies and production technique, the adaptation abilities. The competitiveness position is reflected by the competitive advantage, which is a unique position of the enterprise on the market in regards to its competitors which allows to generate above average profits and surpass the competition (Żabiński, 2000, p. 202). Creating competitive advantage depends on the use of many factors, varying in regards to the market situation and the characteristics of the entities (Nowacki, 2017, p. 155).

The specific character of competition on the goods or services market means that it is especially important for its members to achieve competitive advantage over the rivals. Therefore, it is necessary to formulate competitiveness strategy in order for the companies to survive and to develop themselves (Kisiel, 2005, p. 15). Therefore, it is vital to observe the competitors and to predict their behaviour.

Based on the complexity of bibliographic works, one can divide the factors of competitive advantage of the company on a market with the use of different criteria. The key determinants of the competitiveness of modern enterprises are interactive, as they are a mix of connected factors, which create a multidimensional space (Stankiewicz, 2008, pp. 7–8).

Most commonly, the factors are divided based on the criterion of market character and the criterion of the type of decisions made. According to the former, the competitiveness factors can be divided into market and non-market. The market conditions determine the competitiveness level of the companies and include: the number of offered goods, price and quality of the goods, sale conditions. The non-market factors are mostly associated with the technical development (Andrzejczak et al., 2010, p. 76).

According to the latter condition, the factors can be divided into internal and external. The external conditions can be a part of the close environment (microenvironment) and the distant environment (macroenvironment). Macroenvironment strongly affects the market position of the company and cannot be directly affected by the company, which is not the case with the microenvironment elements which affect the competitive position of the company (Kozioł, 2008, p. 154).

The ability of the company to survive in the conditions of a competitive market is determined by a number of factors, both internal (human resources, production time and costs, technology, price, distribution network) and external (customer preferences, supply, substitution goods). As time passes, some of the factors become more important, while others become less important. The strength of a factor (or a group of factors) depends on the sector in which the company operates. The technology and innovation factors strongly affect e.g. the IT sector, while on the Horeca market, competitive advantage is achieved by the ability to react to customer preferences.

Proecological activity is one of the factors, which is lately said to affect the position and competitive advantage of the company. It is connected with the growth of the environment importance, articulated in the national and international law, but also with the development of ecological awareness of the society and thus the social pressure. Proecological activity of the companies is important for many reasons. Besides the effect of the companies' activity on the environment, the economy of ecological activities and the legal regulations which force ecology, their importance and occurrence in all sectors is a key aspect.

The transport market significantly affects the natural environment. The negative activity of companies on the transport market includes among others: gas emissions, water pollution, but it can be mitigated by proecological solutions.

There are many types of transport companies on the transport market. Basically, every organised entity on the supply side of the market, which is focused on transporting cargo and passengers, which has an economic and legal identity and which provides transport services is a transport company (Wojewódzka-Król, Załoga, Eds., 2016, p. 538). Transport services, both the passenger and the cargo ones, can be diversified in regards to the technological and organisational aspects. The key part of organisation of a transport company is the ability to concentrate real, human and financial resources in an optimal way and adapt them to the market needs (Szałucki, 2016, p. 14).

The main characteristics of the transport market are:

- parallel provision and consumption of services;
- immaterial character of services;
- no possibility of warehousing;
- high fixed costs of transport services provision;
- the use of technology (Rucińska, Ruciński, Wyszomirski, 2004, p. 38).

The transport sector is also characterized by having a negative effect on the environment. This mostly applies to the road transport (Garncarz, 2015, p. 83), which brings about negative effects – mostly the emissions of combustions engines, which affect the atmosphere, the land and the water. The road transport also permanently distorts the physical environment and devastates biosphere (Strulak-Wójcikiewicz, 2014, p. 9).

The transport companies have to adapt their activities to the customers' expectations, which result from a growing ecological awareness, as proven by regular

surveys performed by the Ministry of Environment¹. The companies on the transport market have to face the problem of adapting transport to ecological demands put forward by the regulations and by the society.

2. Ecological factors of competitive advantage of transport enterprises

Transport enterprises can achieve competitive advantage by offering a unique service for a reasonable price. However, more often, the very provision of service becomes an important element of creating market advantage. This is connected with the growing importance of the sustainable development idea, especially for the Member States of the European Union. The sustainable development concept has led to a trend of environment protection, visible in the legislature and the popularity of facultative, proecological activities of the companies. An introduction of ecological norms by the companies also has a marketing dimension and affects its brand, especially among customers with a higher ecological conscience (Krawczyk, 2012, p. 347).

Therefore, projects which allow to present the company as ecologically proactive become more significant. Information, such as the age of motor vehicles become important for the customers not only in the context of safety but also ecology. Precological certificate which prove that the enterprise has introduced a system of environmental management also become important.

EU transport policy has been focused on identifying and introducing tools of reducing the negative effect of transport on the environment. The White Book points out many activities towards a reduction of the negative effect of transport sector on the environment. By 2050, among others, the CO₂ emissions should be reduced by 60% in comparison with the 1990 level, 50% of road transportation should be carried out by different modes, and conventionally powered vehicles should be eliminated from the city centres.

European Union introduces EURO emission norms – from EURO1, in 1993 which applied to personal cars and LGVs to the newest, EURO6, which was introduced in 2014, in which the permissible nitrogen oxide emissions are reduced to 400 mg/kWh, which is 80% less than in the 2009 EURO5 norm. The introduced EURO ecological norms force the carriers to modernize their fleet. The emission norms, which determines the toll payments, affects the cost structure of the whole company, especially if it carries out international transportation. The older the vehicle, the lower the EURO norm, thus the higher the toll. Environmentally friendly vehicles, which are in accordance with the highest EURO norm, generate the lowest rates. The difference on one motor vehicle can amount to more than ten thousand PLN yearly. The difference is higher in the case of transportation in Western Europe countries.

Vehicles which are in accordance with the higher EURO norms also indirectly affect the fuel use, thus affecting the level of the operational costs (a higher norm

¹ <https://www.mos.gov.pl/srodowisko/edukacja-ekologiczna/badania/badania-swiadomosci-ekologicznej/>.

translates into a few thousand zlotys less on fuel yearly; for one car). There is also an environment use tax, which is also affected by the vehicle emission norms (Jacyna et al., 2014, p. 1893).

The system, which has been introduced in Poland is based on the relation between the kilometres travelled and the ecological emission norms met by a given vehicles, which means that the older trucks with lower EURO norms generate higher tolls. The price for the environment protection is paid in a twofold way. They can either upgrade the fleet, thus paying for the purchase of a new, ecological fleet or they can pay higher tolls for transportation using a fleet with a higher EURO norm.

The environmental impact of the rail transport is less significant. According to the EU estimates, the rail transport emission amounts only to 1–3% (Merkisz-Guranowska et al., 2017, p. 200). Therefore, an increase of the share of alternative modes of transport is one of the primary goals of European Transport Policy.

The marine transport is considered to be the most environmentally friendly, due to the ability to transport huge loads of cargo and passengers. The shipowners often decide to use fuels with low sulphur contents. The proecological activities of the marine transport companies include: introduction of cargo optimisation programmes, use of special paints for the hulls.

EU programmes which increase the ecology of the transport enterprises and the directives which imply ecological norms, thus reducing their negative environment impact are not the only examples of proactive behaviour of transport companies. The transport companies often treat such behaviour as a part of green marketing.

Strategically, the transport companies provide their customers with the information on the proecological activity. Websites of these companies often specify proecological activities, such as:

- recycling of used tyres;
- use of modern car washers, which reuse the same water through a closed water circulation and cleaning system;
- installation of separators and filters which prevent dangerous substances from reaching the earth and atmosphere;
- using parts and materials which cause a lower fuel use, which reduces the gas emissions;
- infrastructure maintenance, e.g. creating green fields next to the company HQ;
- training drivers in regards to the ecological traffic behaviour.

3. Programmes and plans for the support of proecological activities of transport companies in Poland

Programmes and plans for the support of proecological activities of transport companies in Poland are based on the analysis of foreign market which generate effective activities in the field of ecological transport.

One of these activities, previously known in Poland (year 2015) is the restriction of access to the city centres for older cars. Such restrictions have been successfully introduced abroad. In many German cities, including Berlin, there are areas, which can only be entered by cars which meet Euro 3, Euro 4 or Euro 5 norms. During the weekdays, Paris cannot be entered by cars produced before 1997. As a result the level of smog is supposed to be cut in half 2020. Such a solution will certainly affect the transport companies, in the fields of transport planning and fleet maintenance.

On the 31.05.2017 European Commission published "Europe on the Move", which is focused, among others, on preparing the first emission standards for cargo vehicles. Therefore, alternative fuel vehicles (CNG, LNG, hydrogen, electric) should grow in importance.

Poland plans to copy the European idea of a wide introduction of electric vehicles. Such a solution requires an appropriate infrastructure, especially a large number of fast charge stations. Currently, there is only one such station in Poland, on the A4 motorway and it can charge batteries with a range of 400 km to 100% in 80 minutes². Electric energy needed to power these vehicles can be produced from fossil fuels, bio fuels and renewable fuels. An introduction of electric vehicles in Poland requires a large investment on production and organisation of infrastructure. However, they can be an ecological and economical solution for transport companies (Judzińska-Kłodawska, 2014, p. 150).

A hydrogen powered vehicle is another possible proecological solution in road transport. The hydrogen can power vehicles in two ways: as a fuel, used in the engine or in fuel cells to produce electric energy which powers an electric engine. Hydrogen is an ecological solution used in Toyota Mirai vehicles in the USA³. Due to the amounts of energy needed to produce hydrogen and the complex technology needed to produce electric energy, the idea of introducing these vehicles is rather vague in Poland. Companies, which would like to use hydrogen powered vehicles would face high costs of this solution (Lejda, Siedlecka, 2014, p. 190).

Programmes and plans of European Union in the area of ecological transport are focused also on promoting bicycle and electric bicycle used in order to follow the idea of sustainable development. Facilities for the cyclists include: development of the infrastructure, including bicycle paths, storage bases, bike sharing programmes. It is however hard to assess the effect of bike transport related programmes on the functioning and competitiveness of transport companies. The relations can be found in the context of customer choices (Przybyłowski, 2016, p. 147).

Increasing the transport efficiency is one of the main challenges of the European Union in the transport area. Increasing efficiency doesn't just reduce the costs but it also is proecological. Reduction of empty cargo transportation through a consolidation of cargo should decrease the CO₂ emissions.

² <http://www.info.clicktrans.pl/ekologia-w-transportcie-drogowym-w-europie/>.

³ *Ibidem*.

Conclusions

- 1) The effect of different modes of transport on the environment is different, hence the European and national programmes are focused on intensifying the activity of entities which have a less negative impact on the environment, e.g. the marine transport.
- 2) Competitiveness of transport companies often depends on factors, which are not connected with the service itself or its price, but with the provision type, which is proven by:
 - an increasing ecological awareness of the Polish society;
 - an increasing number of facultative (not forced by regulations) proecological activities of transport companies, e.g. ecological driving training, use of better materials.
- 3) Restrictions which minimise the negative impact of the road transport on the environment have visible effects in countries such as France or Germany. Introducing similar programmes in Poland, regarding e.g. the access restrictions in the city centres for older cars, should improve the situation. Road transport companies will have to adapt their fleet (upgrade to a newer one) to the emission norms or change the organisation of the routes by bypassing the city centres. Such a solution is often inefficient or impossible.

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Corresponding author

Małgorzata Jarocka can be contacted at: malgorzata.jarocka@ug.edu.pl