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**Market analysis of global rolling stock industry
Market analysis of Czech rolling stock industry**

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Thesis advisor: Miroslav Zilka

Abdullah CIVILIBAL

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Declaration

I hereby declare

to have compiled this final thesis entirely myself, that I indicate all the literature and other supporting materials used in the index of bibliography and that the bound and electronic forms of the thesis are equal. I also declare that I agree with this thesis being published in compliance with Section 47b of Act No 111/1998 Coll.

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Abdullah CIVILIBAL

Abstract

The thesis focuses on the market analysis of the rolling stock industry around the globe and in the Czech Republic. The author investigates the key theoretical aspects related to market analysis, and provides a broad overview of the methods and techniques used for market analysis in corporate practice. In the practical part of the thesis, the author runs the market analysis of the global rolling stock industry, and the Czech rolling stock market. Specifically, the analysis focuses on the Czech Republic's major rolling stock manufacturer Škoda, and develops recommendations for the corporation to improve its market results.

Keywords

Market analysis, PEST analysis, Porter's five forces analysis, rolling stock, SWOT analysis.

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1 Introduction

As of today, the global economy is growing at a very rapid pace. After the 2008 global financial and economic crisis, countries were able to overcome the negative economic consequences, and to re-boost positive growth dynamics. As a result, the level of competition on the global market is only further growing as of today, as the degree of economic interdependence between countries and the involvement of major transnational corporations have reached their peak. As a result, the economic environment in which companies operate is subject to substantial fluctuations, and all economic subjects need to thoroughly monitor it in order to be able to adapt to the changing economic conditions, thus maintaining their financial condition and positions on the market.

For the purpose of being aware of all the current trends and vector of development of their target market, companies require market analysis, which is a set of tools and techniques used for deeply investigating a particular market, and for forecasting its possible dynamics in the near future. Therefore, market analysis provides valuable data for managers to make their weighted managerial decisions in all respects and in all fields.

The relevance of the thesis as of today is predefined by the factors described above, and by the fact that comprehensive market is a key prerequisite for any business to effectively analyze its market position and the opportunities it has for the subsequent growth and development. The rolling stock industry has been chosen for analysis, as railway transport is one of the most important means of passenger and cargo transportations in the Czech Republic, and the trends of development of the Czech rolling stock industry largely predefine the development of the transport infrastructure in the country.

The aim of the thesis is to analyze the most recent trends and dynamics in the global and Czech rolling stock industry. The goals of the thesis are to investigate the definition, functions, methods and techniques of market analysis, and data required for market analysis; to investigate the main parameters of the rolling stock industry; to run market analysis of the global rolling stock industry; to run market analysis of the Czech rolling stock industry; to develop recommendations for Czech rolling stock

manufacturers to improve their market positions and financial results; and to draw conclusions in line with the aim of the thesis.

For the purpose of writing this paper, several key methods will be used. Namely, theoretical overview will be applied in order to investigate the key theoretical aspects related to market analysis, its main functions, methods and techniques; retrospective analysis will be used for investigating the key parameters of the rolling stock industry and its recent development; analysis of market size, trends, growth rate, and the Porter's five forces model will be used in order to run a deep analysis of the global and Czech rolling stock industries; deductive thinking will be used for developing grounded recommendations and suggestions for Czech manufacturers of rolling stock to achieve successful results on the market; and synthesis of data will be applied in order to draw comprehensive conclusions in accordance with the aim and goals of the research.

For maximizing the added value of the research, a number of publications in print and electronic forms will be used. Among other bibliographic sources, print publications will include the following papers: Hanssens, D., Parsons, L. and Schultz, R. (2003). *Market response models*; Stevens, R., Sherwood, P. and Dunn, P. (1993). *Market analysis*; Doole, I. and Lowe, R. (2008). *International marketing strategy*; Alexander, C. (2008). *Market risk analysis*; Blake, D. (2000). *Financial market analysis*; Munizzo, M. and Virruso Musial, L. (2009). *General market analysis and highest and best use*; Xu, J. (2005). *Market research handbook ; measurement, approach and practice*; etc.

Those publications will help deeply investigate the key theoretical aspects related to market analysis. Also, data available online will be analyzed in order to analyze the most recent dynamics of the global and Czech rolling stock industry.

The findings of the research will be practically valuable, and will provide effective recommendations for Czech rolling stock manufacturers on how to improve their market positions.

2 Theoretical Part: Procedure of market analysis

2.1 Definition of market and market analysis

When investigating the key theoretical aspects related to market analysis, it is worth understanding the definition of market. In economics, a market is a set of systems, mechanisms, organizations and institutions, and relations between them, within the framework of which buyers and sellers interact. Therefore, a market is a system where supply of and demand for products meet, forming the price for such goods and services (Stevens, R., Sherwood, P. and Dunn, P. (1993). *Market analysis*, pp. 7-9).

There are different classifications used for differentiating markets, and each particular classification depends on the aspects taken as the basis for such analysis. In the scientific literature, the following classifications are most widely used:

1. According to the objects sold and purchased:

- **resource market.** On this market, all resources used for the development of the economy are traded. Namely, the resource market includes the labor market where labor force is supplied and demanded, market of natural resources, and market of artificial means of production;
- **consumer market.** This market operates for satisfying all possible needs of customers, and includes the food market, non-food market (where clothes, household appliances, personal healthcare and other products are traded), and market of customer services;
- **financial market.** The operation of this market is associated with the multiplication of monetary resources in the economy, and it includes the cash market, loan market, insurance market, and stock market;
- **market of intellectual property rights.** On this market, various patents and copyrights, licenses for the use of particular products are traded;
- **market of intangible valuables.** On this market, pieces of art and titles for them are traded (Kress, G. and Snyder, J. (1994). *Forecasting and market analysis techniques*, pp. 11-13);

2. According to the geographic scale:

- **single markets:** various retail outlets, stores, shops, etc.;
- **local markets:** markets in particular cities or other communities including all single markets on their respective territory;
- **regional markets:** markets of particular regions within the borders of a particular country;
- **national markets:** those markets exist on the territory of entire states, and include all smaller-scale markets;
- **international markets:** those are markets beyond the boundaries of individual states, where trade operations are run between subjects from different countries;
- **global markets:** those markets include all international and domestic markets in a particular industry on the global scale (Alexander, C. (2008). *Market risk analysis*, pp. 27-29).

3. According to the amounts of transactions:

- **wholesale markets:** on those markets, large lots of goods and services are traded between companies and individuals;
- **retail markets:** on such markets, single purchase and sales transactions are effected (Kress, G. and Snyder, J. (1994). *Forecasting and market analysis techniques*, p. 13).

4. Based on the level of competition:

- **free market.** This type of market assumes that there is absolutely no regulation, and no companies use fraudulent activities. It may only exist in theory, but never in practice;
- **competitive markets.** On those markets, high competition exists, and there are no significant barriers for newcomers to enter them. The barriers for the entry of new companies are rather very low;

- **oligopolies.** Such markets are dominated by several major manufacturers or sellers who control the level of prices, and have resources to block the entry of new companies;

- **monopolies.** Such markets are fully controlled by a single company (Kahn, M. and Kahn, M. (2010). *Fundamental market analysis really is technical*, p. 16).

Taking into consideration the definition and specificities of different markets, overall, it can be stated that any market performs the following main functions in its operation:

1. **Information function.** Each market provides all its actors with the information on the range and number of products and services available, thus allowing them making grounded decisions with regard to their further business activities;

2. **Intermediary function.** The market links together all suppliers and consumers, and allows satisfying the needs of all such actors through the mechanisms of sales and purchases between them;

3. **Pricing function.** Through the mechanisms of supply and demand, the market defines the equitable price for goods and services, which serves as a guideline for all market actors in their activities (Winston, W., Stevens, R., Sherwood, P. and Dunn, J. (2013). *Market Analysis*, pp. 20-21).

4. **Regulatory function.** The market balances supply and demand, and thus establishes the equitable proportions in the economy;

5. **Coordinating function.** The market makes manufacturers produce those goods and deliver those services which are currently required by customers;

6. **Stimulating function.** The growing competition on the market makes companies implement new technologies, innovations and achievements for maintaining their market positions, which promotes the overall technological progress of society (Dziri, R. (2011). *Avoiding strategic drifts in a hypercompetitive market*, p. 8).

Thus, it can definitely be stated that the development of markets plays a key role for the effective development of the economy in general, and thus for the social standards of the population's living. In the conditions of growing market competition, the business environment is subject to major change, and companies require to

permanently monitor all such changes for the purpose of eliminating all possible threats to their effective results, and thus for maintaining and further expanding their market positions (Doole, I. and Lowe, R. (2008). *International marketing strategy*, pp. 79-81).

For those purposes, businesses use market analysis. A market analysis is a set of special tools and methods used by an entity for investigating the business environment it operates in, and to forecast the possible future dynamics of its development, with an aim to prevent any negative external and internal impact, and for reaching the highest financial results possible. Thus, market analysis is required for deeply investigating particular aspects of any financial market's operation, and for assessing the impact of all factors affecting an entity's business activities, just as the possible change in such factors in the future. Forecasting makes an integral part of market analysis, as in the current conditions of economic development, the level of fluctuations on any market is very high, and companies need to foresee different scenarios of market development which may bring different results and consequences (Winston, W., Stevens, R., Sherwood, P. and Dunn, J. (2013). *Market Analysis*, pp. 24-26).

A key precondition for the effective market analysis is the segmentation of markets. For obtaining comprehensive results of market analysis, companies need to clearly define the target segments which are of key importance to them, the main factors which affect their activities on such segments, and the level of impact of customers and competitors on them. Such segmentation is indispensable for retrieving data relevant for the respective company's activities, and thus for sparing resources spent on such analysis (Hanssens, D., Parsons, L. and Schultz, R. (2003). *Market response models*, pp. 37-39).

The particular sets and methods of activities used by entities in their market analysis may significantly differ depending on the amounts of resources available, goals pursued, and the importance of the information to be investigated. Therefore, each company's management makes its own justified decisions on the particular combinations of tools and techniques to be included in market analysis. The choice of the most effective combination is a key prerequisite for achieving the maximum expected outcomes, and thus for implementing the best improvements in the respective company's market strategies (Kress, G. and Snyder, J. (1994). *Forecasting and market analysis techniques*, pp. 27-28).

In the next chapters of the thesis, different aspects related to market analysis will be investigated more in detail.

2.2 Tasks and functions of market analysis

Market analysis is run by either own specialists of a company, or by outsourced analysts hired by it for this specific purpose. The persons responsible for the performance of market analysis need to be qualified in order to resolve the particular tasks posed by the corporate management. Such tasks are always coherent with the general aim of market analysis, namely the deep investigation of the respective company's development prospects on its particular target market. Therefore, even though particular tasks set by companies for market analysis may differ, they are always aimed at fulfilling the abovementioned particular aim (Owen, D. and Griffiths, R. (2006). *Mapping the markets*, pp. 73-74).

Taking into account the aforementioned information, the main tasks of market analysis are as follows:

- **to evaluate the overall situation on the market in general.** This includes not only the economic parameters of the target market, but also various political, social, environmental and other factors which largely precondition the development of the respective market, and the main trends and tendencies on it. This goal is indispensable for understanding the entirety of factors and circumstances which may affect a company's performance and prospects for the subsequent development, as well as the threats which may hinder such further expansion;
- **to investigate the behavior of consumers and its tendencies.** Companies need to understand what factors affect the development of their activities in terms of customer demand. For this purpose, they need to clearly define the preferences of customers, how they are subject to changes, and what may provoke such changes, how customer demand responds to any changes in pricing and external market shocks, how the growth of demand is consistent with the growth of the respective country's gross domestic product, etc. (Brown, L. (1937). *Market research and analysis*, pp. 67-69);
- **to investigate the general market conjuncture,** the structure of product supply on it, the volume of trade turnover for particular product groups and items, the level of

demand for such particular product groups, and the factors which favor the high demand for different products;

- **to analyze the recent dynamics of demand for the respective target product.**

Within the framework of this task, companies need to deeply investigate how the demand for this target product has changed in recent year. This is a key prerequisite for understanding the capacity of the market, and the prospects for its future expansion (Kahn, M. and Kahn, M. (2010). *Fundamental market analysis really is technical*, pp. 23-24);

- **to evaluate the level of competition and the impact of competitors on the market.** Investigating the level of competition is a key task for any entity to understand its competitive position, the advantages and drawbacks which this particular company has as compared with other companies running their business activities on the same market. The patterns of competition on the target market largely predefine the respective company's prospects for further growth, and the restrictions which may limit it;

- **to evaluate the prospects of scientific and technological progress in the industry.** As markets are largely driven by innovations in all sectors, those companies which are able to promptly implement the existing innovations or to develop their own ones have substantial competitive advantages as compared with their market rivals. Therefore, the effective monitoring of innovations is a key task within the framework of which companies may evaluate their own innovative position, and the resources they may require for its improvement (Xu, J. (2005). *Market research handbook ; measurement, approach and practice*, pp. 19-20);

- **to evaluate the respective company's own market position and the potential it has** in terms of possible further growth and competitive struggle. When evaluating in detail its target market, a company also needs to clearly understand which strengths and weaknesses it has, and how they can be effectively used for achieving market prosperity. Market analysis aims to find where a company's policies require particular improvements, and what steps should be undertaken by the management for improving the financial results reached by businesses (Brown, L. (1937). *Market research and analysis*, pp. 69-70).

Taking into account the abovementioned tasks, the functions fulfilled by market analysis can be conditionally grouped as follows:

1. **research function.** Market analysis is aimed to investigate the tendencies and trends on a company's target market, the behavior of customers and competitors on it, the factors which affect market development in all respects, and the possible changes in its development dynamics. The research performed within the framework of market analysis provides managers with valuable information which allows making grounded decisions in all fields of business activities, and therefore allows maximizing the financial performance achieved;

2. **forecasting function.** Market analysis helps not only analyze the current trends existing on the respective target market, but also investigate the possible changes in them in the future. This function is particularly important in the current conditions of globalization, when economic relations on all levels tend to change at a very rapid pace, and the overall market environment remains vulnerable to fluctuations. Therefore, understanding the possible changes in the conditions of its activities is a key prerequisite for any company to achieve effective market results (Mooi, E. and Sarstedt, M. (2011). *A concise guide to market research*, pp. 125-126);

3. **controlling function.** By analyzing its target market, a company can get information which it requires for investigating how effectively its past market goals have been reached, and therefore this allows adapting its current strategies and policies implemented in the business activities. Updates of market analysis results are essential for any entity to constantly improve its policies and thus maximize its market results;

4. **audit function.** Market analysis allows revealing a company's resources, and the effectiveness with which it uses its resources for generating profits. This is a key task for finding the aspects where such entity may make improvements for achieving higher financial results (Owen, D. and Griffiths, R. (2006). *Mapping the markets*, pp. 66-67).

Having investigated the main tasks and functions of market analysis, in the next chapter, methods and techniques of market analysis will be analyzed in detail.

2.3 Methods of market analysis

Methods and techniques of market analysis are particular sets of tools used by companies for investigating the overall trends of market development and their own prospects for further growth taking into account the current and expected conditions of the business environment. In the scientific literature, the following main market analysis methods are classified:

1. **PEST analysis.** PEST analysis is the analysis of different external factors which affect a company's activities on its target market, and of the impact they have in different respects on the respective entity's market results. Within the framework of PEST analysis, four key groups of factors are investigated: political, economic, social, and technological (Alexander, C. (2008). *Market risk analysis*, pp. 90-92).

Political factors include different aspects of the political field such as the overall political situation in the country of a company's activities, the level of the government's intervention in the market, the benefits of the governmental policies in the field of doing business, the contacts and tightness of cooperation with foreign countries, the level of integration in the system of international relations, and so on. Overall, the political factors largely predefine the conditions in which companies operate, namely the ease of doing business, and the expected stability in the future taking into account the possible changes of the political course in the future, etc.

Economic factors include various economic conditions such as the growth of the respective country's gross domestic product, level of foreign direct investment inflows, stability of the foreign exchange rate, steadiness of industrial growth, etc. Companies are able to reach higher results in countries which show greater economic development indicators, as the overall business environment in them are much better (Munizzo, M. and Virruso Musial, L. (2009). *General market analysis and highest and best use*, pp. 73-74).

Social factors include various factors of social development such as the social standards of the population, the purchasing power of customers, the level of the population's involvement in social activities, the perception of different companies and activities by people, and so on.

Technological factors include the level of technological progress on a particular market, the importance of innovations in corporate activities, the level of research and

development activities run by companies, etc. In markets with higher technological development, companies are subject to fiercer competition, but at the same time have greater growth prospects, as they are able to convert their own inventions and innovations into high financial results (Hanssens, D., Parsons, L. and Schultz, R. (2003). *Market response models*, pp. 113-114).

2. **SWOT analysis.** This market analysis method is aimed at analyzing a company's internal growth factors in their tight interconnection with the factors of the external environment. SWOT analysis stands for the investigation of a company's strengths, weaknesses, opportunities and threats on its target market. Strengths stand for those internal factors which constitute a company's competitive advantages as compared with its market rivals, resources it has for boosting further development, the level of practical experience gathered through market activities, etc. At the same time, weaknesses are drawbacks which hinder a company's effective market development. For instance, such weaknesses may include the lack of resources, insufficient qualification of the staff, lack of developed networks of ties with suppliers, excessive risks incurred in the course of business activities, etc. (Ganly, J. and Frank, N. (1994). *Data sources for business and market analysis*, pp. 153-155).

A company's opportunities and threats are external factors which predefine how effectively it may develop on the target market, and what possible scenarios may develop taking into account the impact of such differently vectored factors. For instance, opportunities existing on the market may include its fast growth, lack of legislative restrictions, inflow of investment, increase in customer demand for particular products, etc. Threats may include the imposition of restrictions by the government, entry of new major competitors, recession on the market, contraction of customer demand, etc. Companies should find the best balance between their strengths and the opportunities available on the market taking into consideration the weaknesses and threats, in order to achieve the highest effectiveness in their activities (Owen, D. and Griffiths, R. (2006). *Mapping the markets*, pp. 64-65).

3. **Porter's five forces model.** This market analysis method was developed by Michael Porter, and its main aim is to investigate the impact of five main competitive forces on a company's market activities in order to understand the development prospects it may have in the future. Porter's five forces model includes the following key components:

- threat of new entrants. For companies already performing their activities on a particular market, the best situation is when the barriers to the entry of new businesses are high. Overall, the level of such barriers is predefined by a great number of factors such as the government's licensing and patent policies, level of the overall state regulation of the market, absolute costs borne by companies, profitability of the market for companies, etc. (Blake, D. (2000). *Financial market analysis*, pp. 127-129);

- threat of substitute products. Companies need to thoroughly evaluate the target market for the availability of products which customers may prefer to their own goods and services offered. In terms of this component, the availability of substitute products, ease of substitution, level of product differentiation, comparative prices for substitute products, and costs incurred by buyers for such substitution are to be investigated;

- bargaining power of customers. This component of Porter's model assumes that customers' power should be analyzed separately as a key component of any target market. Namely, it includes factors such as the relative concentration of buyers as compared with the concentration of companies, switching costs borne by buyers, price sensitivity of buyers, information available to them, etc. (Mickey, Kathy and Meaney, Karen, 2004, *Academic testing materials*, pp. 57-60);

- bargaining power of suppliers. All manufacturers are much dependent on their suppliers, and therefore should thoroughly evaluate their competitive impact. Namely, within Porter's model, the bargaining power of suppliers is predefined by the concentration of suppliers, development of distribution channels, switching costs, etc.;

- intensity of competitive struggle. This component includes the evaluation of a company's competitive advantages on the market, level of research and development costs and advertising expenses, investigation of market strategies implemented by the major companies, and the concentration of companies on the particular target market (Stevens, R., Sherwood, P. and Dunn, P. (1993). *Market analysis*, pp. 107-109).

Most often, the abovementioned market analysis methods are combined by companies for reaching the maximum expected results of market analysis, and are applied together with different forecasting techniques allowing better investigating the possible changes in the market in the future (Dziri, R. (2011). *Avoiding strategic drifts in a hypercompetitive market*, p. 24).

In the next chapter, data required for running market analysis will be investigated more in detail.

2.4 Data required for market analysis

Taking into account the methods and techniques of market analysis described in the previous chapter of this thesis, companies require various data for running market analysis, including both statistical data and non-numerical information which allows better understanding their growth prospects on the respective target market. Therefore, all such data required for market analysis can be conditionally classified as follows:

- information related to the external environment. Companies need to gather data on the recent trends and dynamics persistent in the external environment of their business activities. For instance, such information may include the dynamics of GDP, net FDI inflows, fluctuations of the foreign exchange rate, changes in the legislation, implementation of restrictive policies by the government, new innovations implemented in the business practice of companies, changes in the purchasing power of the population, and so on. All such information allows drawing conclusions on the environment in which a company operates, i.e. on the circumstances in which it runs its activities (Doole, I. and Lowe, R. (2008). *International marketing strategy*, pp. 133-134);

- information related to the market. This component includes data such as market growth, changes in the structure of demand, preferences of customers, structure of companies present on the market, availability and impact of suppliers, quality of products and services offered, and any other information which may be relevant when speaking of the deep investigation of the market and forecasting of the possible changes in the demand and supply on it in the future (Kahn, M. and Kahn, M. (2010). *Fundamental market analysis really is technical*, p. 71);

- information related to competitors and competitive struggle. Such information should include the structure of the market in terms of the shares held by a company's main market competitors, dynamics of their sales and income indicators, breakdown of aggregate cities by particular geographic regions and customer groups, evaluation of different companies' expenses for advertising and research and development activities,

availability of substitute products and prices for them, and all other data which allow evaluating the level of competitive struggle on the respective target market and the dynamics of its change in recent years, just as the possible transformation of such competition in the future (Mickey, Kathy and Meaney, Karen, 2004, *Academic testing materials*, p. 55);

- information related directly to the company. Such data include a company's own resources, dynamics of the key market indicators such as income, cost of sales, gross profit, net profit, liabilities, assets, etc., investigation of the main advantages and drawbacks of its organizational structure and distribution of powers, effectiveness of the strategies and policies currently implemented, coherence between the resources used and the market outcomes, expected development in the near future. The deep analysis of internal factors predefining a company's development is a key prerequisite for achieving the desired results of market analysis, as it allows revealing the reserves which the respective company may use for boosting its development and improving its financial indicators. Such analysis is also required for clearly understanding where the company may already have some competitive advantages as compared with its market rivals, and how they may be used effectively for improving its economic growth (Munizzo, M. and Virruso Musial, L. (2009). *General market analysis and highest and best use*, pp. 86-87).

Taking into account the functions of market analysis and data required for running it, the next chapter of the thesis will investigate the expected outcomes of market analysis.

2.5 Expected outcomes of market analysis

When running a market analysis, each company follows its particular goals which have been described earlier in this thesis. Therefore, taking into consideration such goals pursued by businesses and the functions and methods of market analysis, it can be stated that the expected outcomes of market analysis are as follows:

- evaluation of the current capacity of the target market. The information generated through market analysis allows understanding the actual capacity of the market, i.e. the company's ability to effectively sell products on it taking into account

the current number of customers and their purchasing power. This outcome also includes the presentation of clear results with regard to the current competition on the market, and the share held on it by the respective company (Mickey, Kathy and Meaney, Karen, 2004, *Academic testing materials*, p. 33);

- analysis of the main customer preferences and factors affecting them. In the long run, a company needs to clearly understand what products are preferred by customers on its target market, and how those preferences can be effectively used in its marketing and promotion activities for boosting the turnover of sales (Xu, J. (2005). *Market research handbook ; measurement, approach and practice*, p. 92);

- forecasting of the possible future development of the market taking into account the current dynamics of its growth. Any company running market analysis needs not only to analyze the current trends and tendencies persisting in the particular industry of its activities, but also the possible changes in them which may occur in the future. Forecasting makes an integral part of market analysis, and the expected outcomes here may include the forecasted figures of market growth in terms of its capacity, the expected changes in the structure of competition, possible changes in customer preferences, possible changes in the legislation, and all other expected changes in those factors which affect most the respective company's market performance (Owen, D. and Griffiths, R. (2006). *Mapping the markets*, p. 50).

Within the framework of the above expected outcomes of market analysis, business need to effectively evaluate particular market indicators characterizing the size of the market, and the level of benefits which may potentially be generated by the respective entity on it through its commercial activities. In this context, the following key indicators can be pointed out:

- **total sales.** This indicator shows the aggregate amount of products sold on a particular target market. It is important to analyze this indicator in dynamics, as the changes in it show the actual amount of products currently demanded by the population on the target market;

- **annual growth (AG).** This indicator shows the changes in the total sales on a company's target markets as compared with previous periods. The higher the annual growth rate, the greater the respective company's opportunities to gain higher profits.

The formula used for calculating annual growth is $AG = \frac{TS_i}{TS_0}$, where TS_i is stands for the figure of total sales in the current period, and TS_0 - for the total sales on the respective target market in the basic period;

- **compound annual growth rate (CAGR).** This indicator is used for calculating the geometric progression ensuring constant financial return within a particular timeframe. This indicator is particularly valuable for running comparative analysis of the growth rates achieved by different companies in the same industry. The formula used for calculating CAGR is $CAGR(t_0, t_n) = (V(t_n)/V(t_0))^{\frac{1}{t_n-t_0}} - 1$, where $V(t_0)$ is the start value, $V(t_n)$ stands for the finish value, and $t_n - t_0$ - for the number of years;

- **gross profit margin.** This indicator shows a company's gross profit generated in the course of its activities as compared with the level of its revenues. It is important for businesses to maintain the value of this ratio at constant levels for ensuring the long-term financial stability. The formula used for calculating it is:

$$GPM = \frac{Revenue - COGS}{Revenue}, \text{ where COGS stands for the cost of goods sold;}$$

- **net profit margin.** This indicator shows a company's ultimate profitability after taxation. Each entity should seek reaching the highest possible net profit margin for maximizing the financial effectiveness of its commercial activities. The formula used for calculating the net profit margin is: $NPR = \frac{NP}{Revenue}$, where NP stands for net profit (Mickey, Kathy and Meaney, Karen, 2004, *Academic testing materials*, pp. 43-46).

All such data obtained by a company through market analysis are of a great value to it, as they allow drawing a comprehensive image of the target market's current development in all respects, the impact different competitive forces have on it, the particular factors which predefine the prospects of market growth for companies, resources which should be used by the respective entity for improving its financial results, and the expected changes in all such factors in the future, which is particularly important for applying the most up-to-date methods and approaches in corporate activities, and thus for being able to effectively withstand market competition (Hanssens, D., Parsons, L. and Schultz, R. (2003). *Market response models*, pp. 148-149).

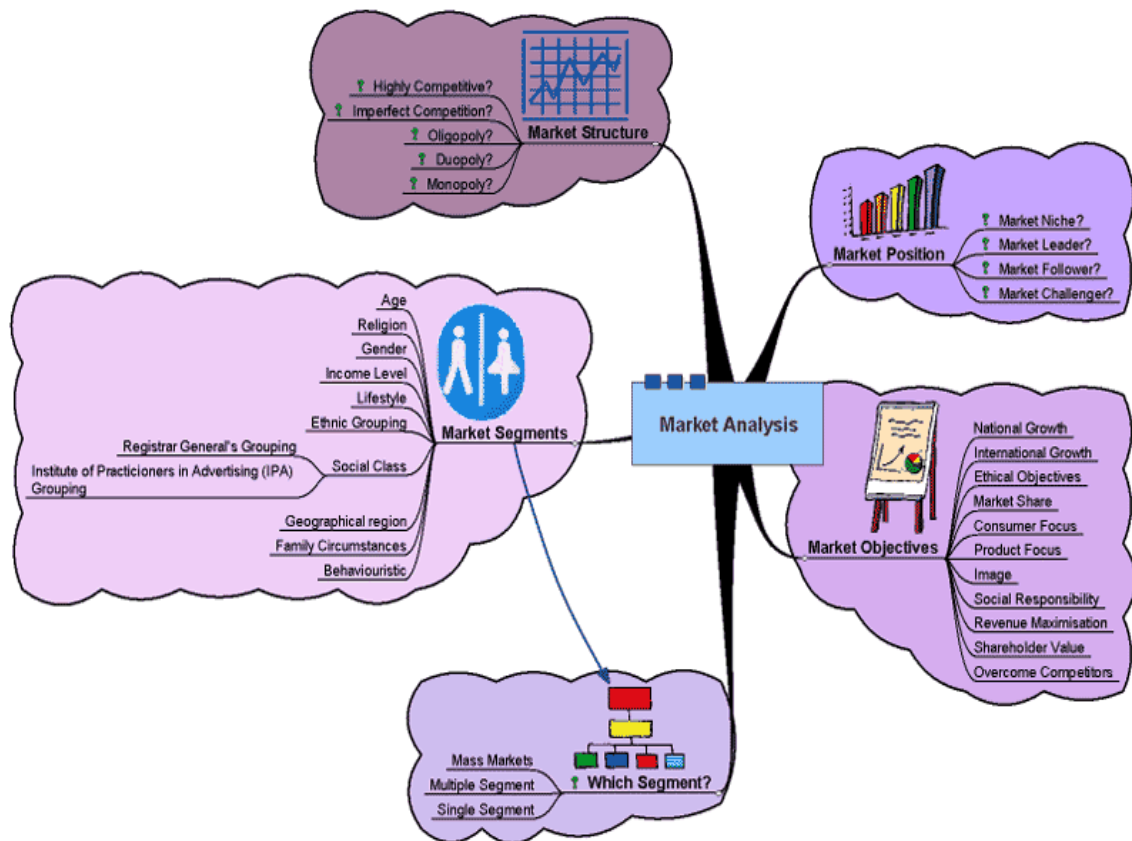


Figure 1. Conventional market analysis procedure

(Source: <http://www.bized.co.uk/sites/bized/files/images/analysismap.gif>)

Based on the findings of the theoretical part of the thesis, a conventional market analysis procedure scheme can be drawn. As can be seen from Figure 1 above, each market analysis should be implemented in a way to cover the essential market objectives and market position of the respective company and should provide valuable data for the effective segmentation of the market based on the data available regarding the structure of the target market and the level of competition on it. The effective implementation of all the above aspects of market research allows companies drawing comprehensive conclusions on their opportunities for the subsequent market expansion, and thus for the improvement of their results achieved through the commercial activities.

As can be seen from the chart, market analysis is a complex procedure covering many different aspects, all of which require thorough investigation for a company to make grounded managerial decisions. Namely, each company requires clearly understanding the current structure of the market for the purpose of knowing the actual

level of competition on it, and the main market rivals which act as its key competitors. At the same time, the company's own competitive position needs to be known for the purpose of undertaking any further actions aimed to improve its financial condition and reach better market results. In line with its current resources and capacities, and the objectives pursued by it on the market, each company performs market segmentation, and carries out a more detailed analysis for the respective target segment. Such step-by-step analysis allows reaching effective results of market analysis, and thereafter reaching higher financial results.

In the next part of the thesis, I would like to proceed to the practical analysis of the global and Czech rolling stock market.

3 Practical Part: Market analysis of the global and Czech rolling stock industries

3.1 General overview of the rolling stock industry

When investigating the development of the rolling stock market, it is first of all worth understanding the definition of rolling stock as a subject of market deals. Thus, rolling stock stands for vehicles and transport means which move on railways, and include both powered and unpowered vehicles. Thus, the term rolling stock includes all possible means of transport used on railways for performing the transportation of both cargoes and passengers (Moore, H. (1991). *Rolling stock*, p. 17).

The historical development of the rolling stock industry was connected with the development of the technological progress on the international scale, and with the start of usage of electrified transport with commercial aims. With the course of time, the requirements to rolling stock have been constantly growing as a result of changes in customer needs and preferences. Thus, as of today, the most essential requirements to rolling stock include safety, solidity, cost-effectiveness, energy-effectiveness, high speed, carrying capacity, etc. Companies running their activities on the global rolling stock market heavily invest in research and development, as the market is largely driven by innovations. Thanks to this, new types of powered and unpowered railroad vehicles constantly appear on the market, and the level of their customer parameters tends to constantly grow (Booth, T. (1995). *Locomotive and rolling-stock construction*, pp. 34-35).

Taking into account the specificities of rolling stock, the main types of rolling stock are as follows:

- Freight cars. This type includes different cars used for carrying cargoes. Namely, freight cars include various railroad vehicles such as boxcars, flatcars, covered hoppers, coil cars, open wagons, mine cars, stock cars, tank cars, gondolas, etc. All those different types of freight cars are used for transporting different types of goods, and are suitable for particular groups of goods such as bulk products, solid goods, liquids, etc.;
- Passenger cars. In contrast to freight cars, passenger cars are used for transporting passengers, and not cargoes. Such cars can significantly differ by type of

technologies used, division of compartments inside them, number of passengers which can be hosted, level of equipment used for passenger comfort, etc.;

- Locomotives. This type of rolling stock includes railroad vehicles providing the motive power for trains. Locomotives are not used for transporting cargoes or passengers on their own, but are rather used for ensuring such transportations by trains including freight and passenger cars. Depending on the motive power used, locomotives can be conditionally subdivided into steam, gasoline, diesel, electric, gas, atomic, and hybrid locomotives, etc.;

- Multiple units. Those railroad vehicles include self-propelled railway carriages controlled from a single driving cab which can be coupled with other vehicles. Such vehicles are most often used for passenger transportations, while locomotives are more commonly used when speaking of cargo transportations. Depending on the power source, all multiple units can be subdivided into electric and diesel multiple units. At the same time, diesel multiple units include diesel-electric, diesel-mechanical, and diesel-hydraulic multiple units;

- City public transportation units. Those rolling stock units include metro trains and trams, i.e. vehicles used for the transportation of passengers for relatively short distances within limited metropolitan areas (Booth, T. (1995). *Locomotive and rolling-stock construction*, pp. 32-34).

The effective use of all those types of rolling stock and their subsequent development through innovations largely predefine the general vectors and trends of development of the global transport industry. Therefore, the role played by the rolling stock market in those terms is essential for the sector of transportations. In the next chapter of the thesis, the current trends and vectors in the global rolling stock industry will be investigated more in detail.

3.2 Market analysis of the global rolling stock industry

The global rolling stock industry stands for the aggregate market production in the sector around the globe. Inherently, the leaders in the global rolling stock industry are those countries which have great industrial capacities, and are able to furnish up-to-

date technologies in the field, thus contributing to the highest ultimate satisfaction of customers in all respects.

	2008-2010	2011-2013	2014-2016
Europe	12.9	14	14.8
China	11.6	11.5	9.2
North America	3.7	3.8	4.6
CIS	2.5	3.7	4.7
Latin America	1.8	1	1.4
India	1.4	1.9	2.3
Asia Pacific	1.8	2.3	2.5
Total	35.7	38.2	39.5

Table 1. Global annual rolling stock market volume from 2008 to 2016 (projected), in USD billion

(Statista.com 2015)

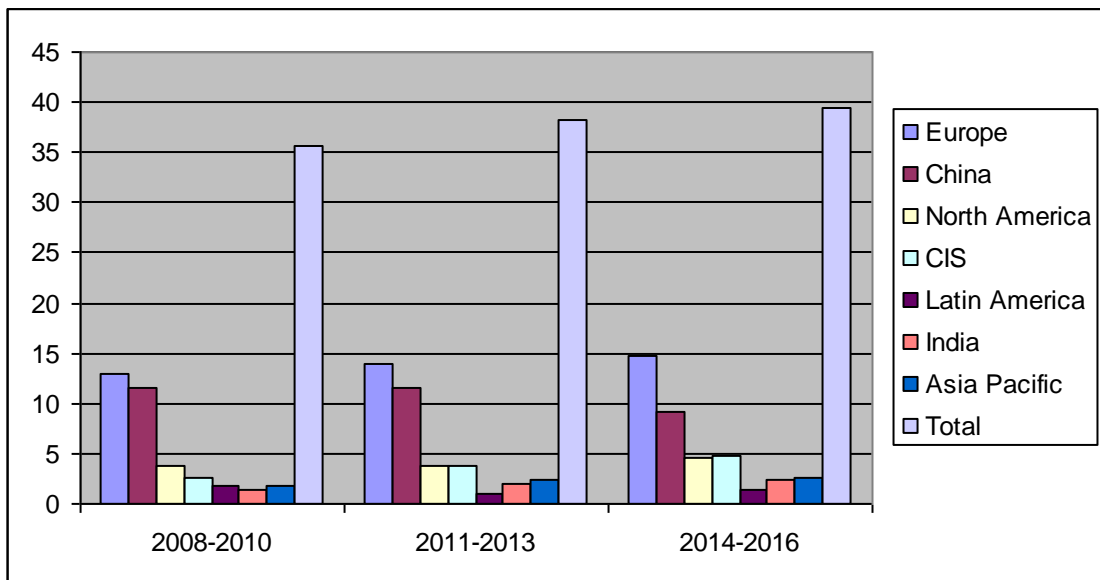
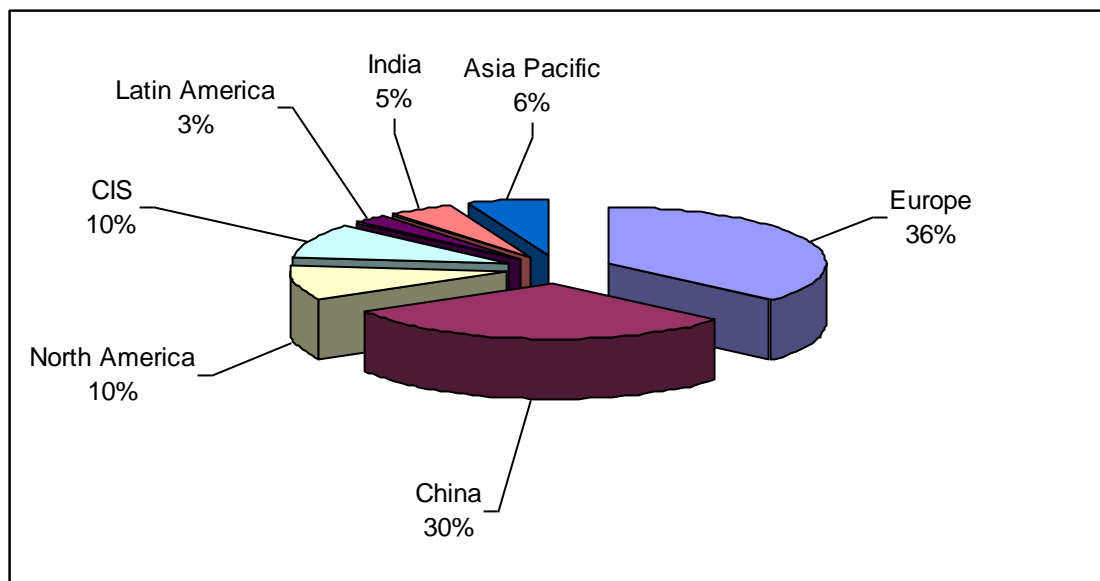


Figure 2. Global annual rolling stock market volume from 2008 to 2016 (projected), in USD billion

(Statista.com 2015)

As can be seen from Table 1 and Figure 2 above, the overall trends on the global rolling stock market have lately remained positive. Thus, the total volume of production on the global market has been steadily growing in recent years. In 2008-2010, the aggregate global rolling stock market volume made up USD 35.7 billion. In 2011-2013, this figure amounted to USD 38.2 billion, i.e. it grew by approximately 7% as compared with the previous year. The projected global rolling stock market growth for the period from 2014 to 2016 amounts to USD 1.3 billion. When analyzing more deeply the trends on the global rolling stock market across different geographic regions, it is worth noting several groups of different tendencies. Thus, all geographic segments of the global rolling stock industry tend to demonstrate steady growth, except for China. In contrast to the rest of the world, China has recently been demonstrating negative growth dynamics. The projected decrease in China's global rolling stock market is even further deeper, and therefore the expected tendencies here are negative for the Chinese market. The greatest growth is expected in the CIS countries, including the Russian Federation, where a great boom in the rolling stock industry has been observed in recent years.



**Figure 3. Global rolling stock market structure by volume, as of 2013
(Statista.com 2015)**

As Figure 3 above illustrates, the greatest share on the global rolling stock market in terms of production belongs to Europe. In aggregate, European countries

account for 36% of the global rolling stock production. China slightly lags behind, with 30% of the aggregate global production. Other important geographic segments of the global rolling stock industry include North America, and the Commonwealth of Independent States (10% of global rolling stock production each), while the shares of other regions are smaller. It is particularly worth noting here the great shares accounted for by China (the largest rolling stock manufacturer in the world) and India (5% of global rolling stock production). As the previous charts have illustrated, the European rolling stock market is expected to further grow in volumes, and therefore it will be likely to further improve its global positions in the rolling stock industry in terms of the total share in production, while China's share will be likely to continue decreasing. However, in the breakdown by countries, China will still be likely to remain the world's greatest manufacturer of rolling stock, since its positions are solid as of today.

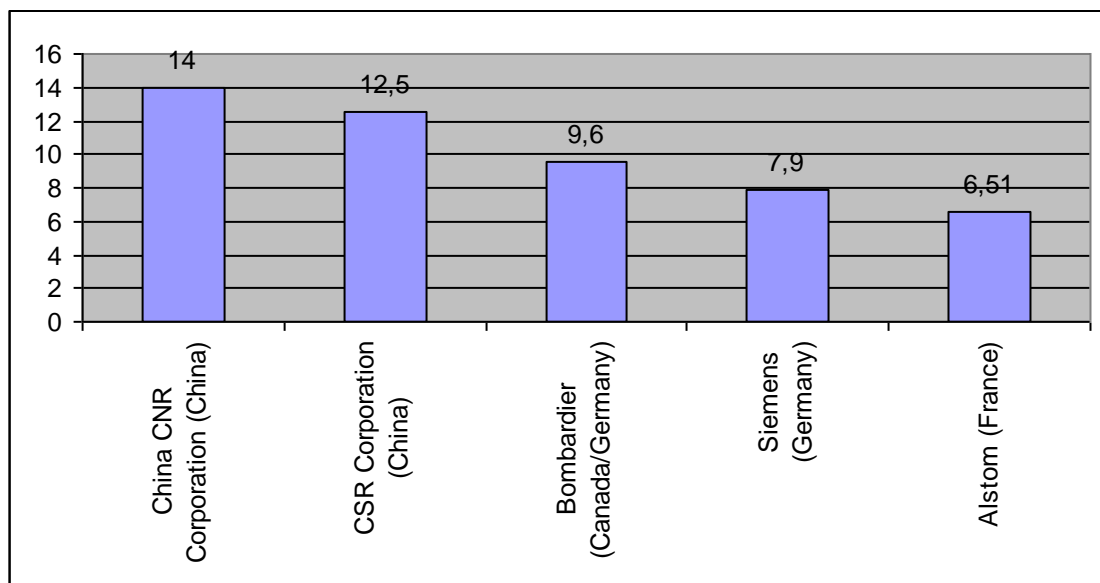


Figure 4. Top 5 global rolling stock manufacturers by revenues, as of 2011, in USD billion

(Statista.com 2015)

Figure 4 above demonstrates the current global rolling stock market structure by corporations. As can be seen from the chart, the world's major rolling stock manufacturer in terms of the aggregate revenues is China CNR Corporation (USD 14 billion as of 2011). The second place is held by another Chinese corporation, namely

CSR China Corporation (USD 12.5 billion). The other companies in the Top 5 global rolling stock manufacturers are European corporations, and their aggregate revenues are considerably lower as compared with the ones of Chinese companies. Namely, those are Bombardier (Canada/Germany, USD 9.6 billion of revenues as of 2011), Siemens (Germany, USD 7.9 billion), and Alstom (France, USD 6.51 billion).

By 2019, the global rolling stock industry is expected to grow to USD 45.7 billion by aggregate production volume. In the Asian region, the greatest growth should be expected in countries such as India, Indonesia, and Thailand. This is preconditioned by the rapid industrial development of those states, and by the great improvement in their transport infrastructure after the 2008 global financial and economic crisis. In those states, there are great inflows of investment in the rolling stock industry, which ensures the rapid growth of the segment. In Europe, the development of the rolling stock industry should be expected due to the rapid technological development of the segment of alternative fuels used for the railway transport. The rising consumer demand for rolling stock on the continent would be ensured by market growth in France, Switzerland, and Germany, where major global rolling stock manufacturers such as Alstom, Sandler Rail, and Siemens, etc. are running their activities. In North America, the main trend in the rolling stock industry in the near future will be likely to be growth in demand for locomotives and transit vehicles, which is mainly associated with the intensive urbanization. The most prominent rolling stock manufacturers in the region are the American company GE Transportation, and the Canadian enterprise Bombardier. In the CIS, the rolling stock industry is expected to grow thanks to the growing level of production in the Russian Federation and Belarus, namely for the purpose of ensuring exports to Central Asian countries.

Thus, overall, it can be stated that the development of the global rolling stock industry has lately remained much dynamic, and most regions around the globe are expected to show further great growth dynamics in the rolling stock industry in the near future.

In the next chapter, the rolling stock market of the Czech Republic will be investigated more in detail.

3.3 Market analysis of the Czech rolling stock industry

For the Czech Republic, the rolling stock market is much important due to the country's great integration into the European Union's economy, and thus due to the country's great dependence on the effective development of the transport infrastructure used for running foreign trade operations. As of today, the Czech Republic is one of Central Europe's most prominent economic actors, and therefore it is worth analyzing the current trends on the country's rolling stock market more in detail.

	Locomotives			Multiple units		Passenger cars
	Electric	Diesel	Steam	EMU	DMU	
České dráhy a. s.	925	1,130	22	216	766	4,133
Jindřichohradecké místní dráhy a. s.	0	11	3	0	4	12
Klub přátel lokálky o. s.	0	3	0	0	1	2
Klub železničních cestovatelů Doprava s. r. o.	0	2	0	0	4	3
Ostravskokarvinské doly Doprava a. s.	2	98	0	0	0	0
Railtrans s. r. o.	0	3	0	0	5	0
Společnost železniční výtopna Jaroměř	0	4	3	0	1	6
Viamont a. s.	1	35	0	0	0	0
Other operators (incl. infrastructure companies)	42	188	0	0	1	504
Total	970	1,474	28	216	782	4,660

Table 2. Rolling stock of Czech railway companies, as of 2010, number of rolling stock units

(Jaspers-europa-info.org 2013)

Table 2 above shows the current availability of rolling stock to the Czech Republic's main railway transport operators. As can be seen from the data above, the largest demand for rolling stock on the Czech market is generated by the national railway transport operator České dráhy a. s. Namely, it accounts for over 80% of the Czech rolling stock used for railway transportations of both cargoes and passengers, while other companies significantly lag behind in terms of the number of rolling stock

units available for their use in the business practice. This pattern is much illustrative when speaking of the Czech rolling stock market, as it testifies that demand here is dominated by one major market actor, which largely predefines the structure of sales of rolling stock, and the presence of different domestic and foreign rolling stock manufacturers in the Czech Republic.

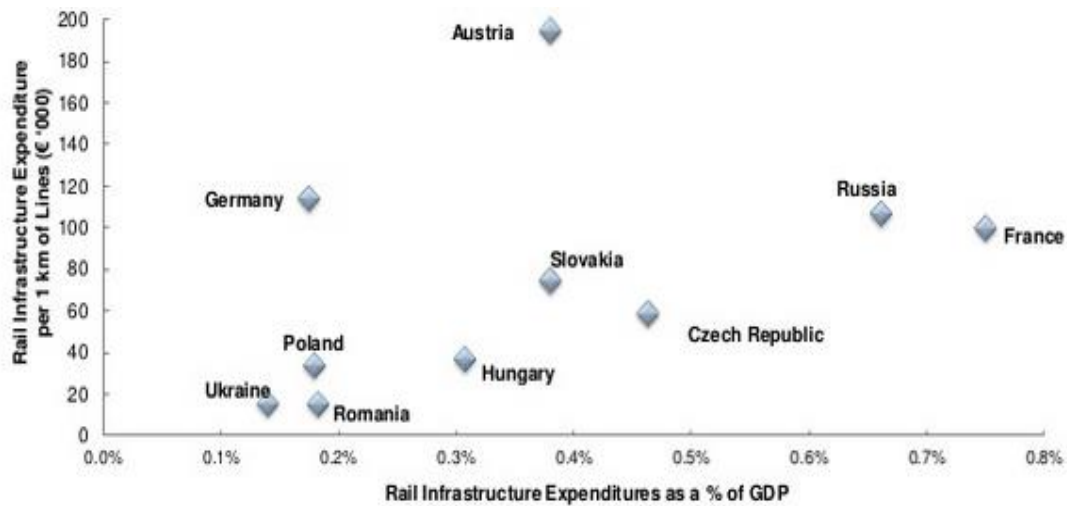


Figure 5. Investment in rail infrastructure as a function of rail network length and GDP in Central and Eastern Europe, as of 2013
(Frost&Sullivan 2013)

As Figure 5 above illustrates, the investment in rail infrastructure in the Czech Republic is the highest in Central Europe as a percentage of gross domestic product, and is second only behind Slovakia per 1 km of railway lines. This testifies the importance of the rolling stock market for the country, and also shows the opportunities which rolling stock manufacturers have for selling their products in the country.

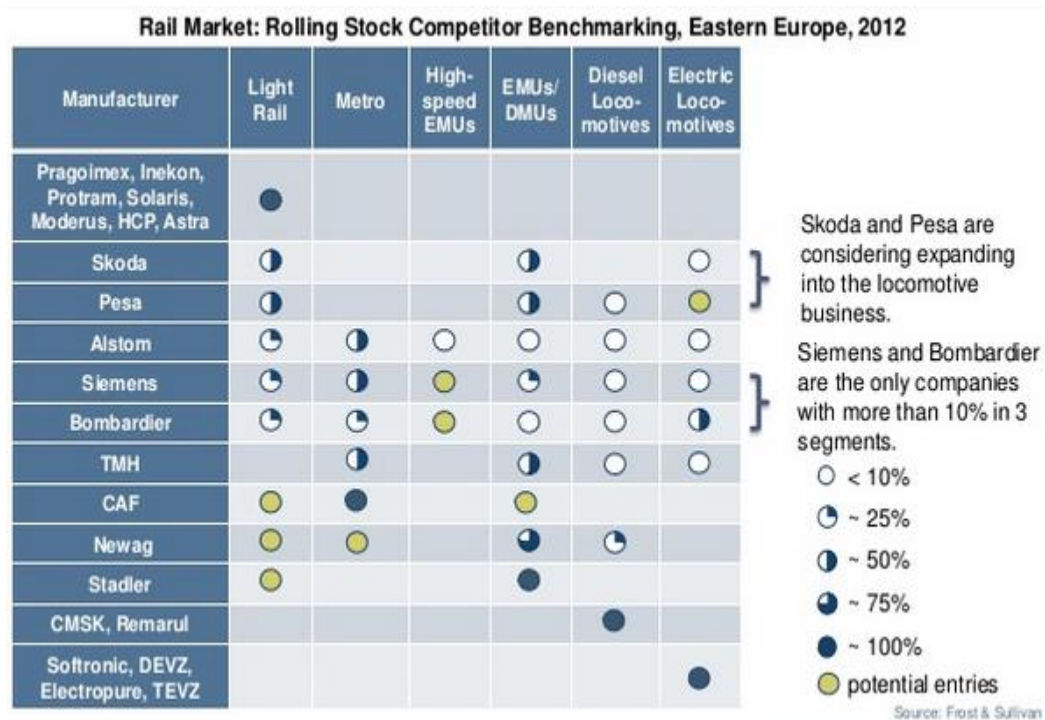


Figure 6. Shares of different Central and Eastern European companies in the local rolling stock markets, as of 2012

(Frost&Sullivan 2013)

As Figure 6 above illustrates, the Czech Republic’s major rolling stock manufacturer is Škoda group of companies. The company controls approximately 50% of the market of light rail vehicles, electric and diesel motor units. In the near future, the company also seeks expanding its activities to the market of electric locomotives. Therefore, it can be stated that Škoda group of companies is the country’s greatest rolling stock manufacturer, and the company holds stable leading positions in the Czech Republic, also playing an important role on the Central European rolling stock market.

Most other acquisitions made by Czech railway operators are the orders placed among foreign rolling stock manufacturers or purchases of used rolling stock from other Czech railway operators. For instance, in 2015, České dráhy a. s. purchased 41 coaches, 4 restaurant cars, and 5 car-carrying wagons from the Austrian rolling stock manufacturer ÖBB for EUR 14.4 million, which remains the year’s largest order as of today (Railway Gazette 2015).

In addition to Škoda Group companies (Škoda Transportation a.s., Škoda vagonka a.s., Pars Nova a.s.), other important actors on the Czech rolling stock market are Bonatrans Group a.s., LEGIOS a.s., CZ LOKO, a.s., Bombardier Transportation Czech Republic, a.s., and IFECR, a.s.

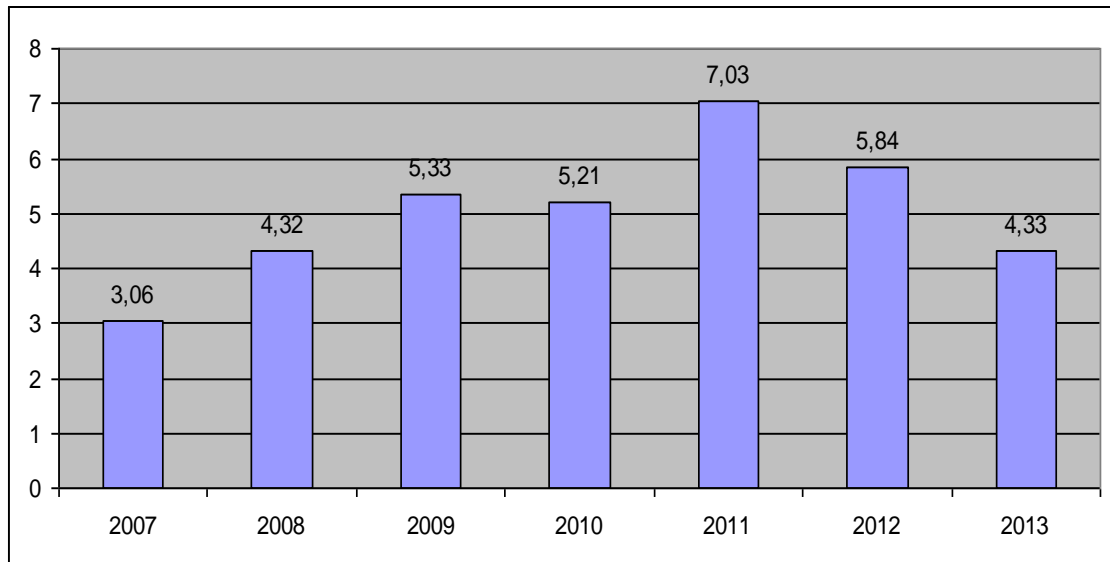


Figure 7. Dynamics of the average gross profits of Czech rolling stock manufacturers in 2007-2013, in CZK billion

(Ministry of Industry and Trade of the Czech Republic 2015)

As can be seen from Figure 7 above, the Czech rolling stock industry has lately been demonstrating steady dynamics. Thus, the industry has been generating profits in recent years, which is positive for the rolling stock industry. However, in the period from 2011-2013, there was a slight dropdown in the level of the Czech rolling stock manufacturers' profits, which testifies negative tendencies for the industry, and may mean decreased effectiveness of rolling stock production in the country.

Based on the data presented on the chart above, it can be stated that the main market indicators of the Czech rolling stock industry are as follows:

1. Annual growth rate:

$$AG_{2012/2011} = (TS_{2012} - TS_{2011}) / TS_{2011} = (5,84 - 7,03) / 7,03 = -0,1692$$

$$AG_{2013/2012} = (TS_{2013} - TS_{2012}) / TS_{2012} = (4,33 - 5,84) / 5,84 = -0,2586$$

2. Compound annual growth rate: $CAGR(t_0, t_n) = (V(t_n) / V(t_0))^{\frac{1}{t_n - t_0}} - 1 = (4.33 / 3.06)^{\frac{1}{6}} - 1 = 6\%$

The figures above prove that the revenues generated by companies running their activities on the Czech rolling stock market have lately been steadily positive. It is also particularly worth noting that the compound annual growth rate on the Czech market of rolling stock is almost twice higher as compared with the projected CAGR value in the global rolling stock industry by 2019 (3.48%) (Markets and Markets 2015).

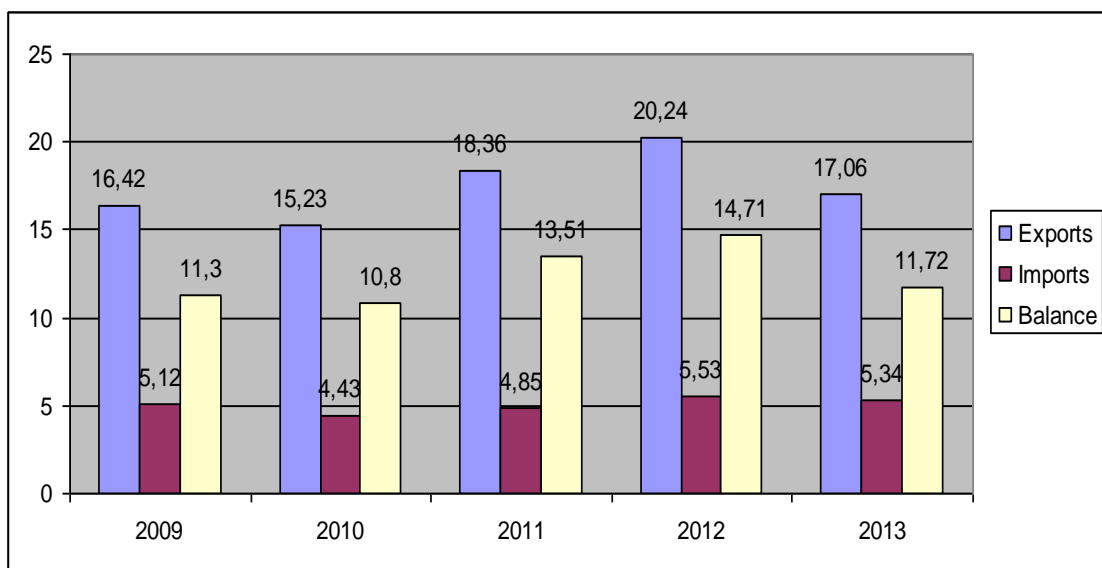


Figure 8. Czech rolling stock manufacturers' foreign trade dynamics in 2009-2013, in CZK billion

(Ministry of Industry and Trade of the Czech Republic 2015)

Figure 8 above illustrates that the foreign trade balance of the Czech Rolling stock manufacturers has lately been constantly positive. This testifies that the local manufacturers export considerably more than they import. This tendency is positive for the Czech national economy, as this industry generates additional monetary inflows in the country. The great exports of the Czech rolling stock manufacturers testify that the country's rolling stock industry holds prominent positions in the European Union, and contributes to the powerful industrial positions of the Czech Republic in Europe.

Therefore, the Czech rolling stock market is dominated by a single company in terms of demand, while supply is characterized by competitive struggle between the Czech major rolling stock manufacturer Škoda Group and its foreign market rivals. In the next chapter of the thesis, a more detailed market analysis will be run for Škoda Transportation for the purpose of better evaluating the company's position on the Czech rolling stock market, and its growth prospects.

3.4 Market analysis of Škoda Transportation

Škoda Transportation is a company making part of the Škoda Group which manufactures rolling stock and other vehicles. The company was incorporated in the Škoda Group in 1995, and is headquartered in Plzeň. Its staff includes 4,800 employees. Škoda Transportation produces a wide range of rolling stock and other vehicles, including locomotives, railcars, push-pull trains, EMUs, tramways, metro cars, trolleybuses, etc. The rolling stock units of Škoda Transportation are operated by companies from the Czech Republic, Slovakia, Germany, the Russian Federation, Ukraine, Bulgaria, Romania, Latvia, Turkey, Hungary, Poland, Italy, Finland, Lithuania, and the United States (Škoda Transportation a.s. 2015). Some of the company's products are presented on the figures below.



**Figure 9. Škoda 109 E electric locomotive
(Škoda Transportation a.s. 2015)**



**Figure 10. Škoda CityElefant EMU
(Škoda Transportation a.s. 2015)**



Figure 11. Škoda 109 E2 push-pull train
(Škoda Transportation a.s. 2015)



Figure 12. Škoda Neva railcar
(Škoda Transportation a.s. 2015)

In 2014, Škoda Transportation's aggregate turnover amounted to CZK 15.5 billion, i.e. grew by 6% as compared with the previous year, and the company's net earnings made up approximately CZK 1.7 billion. In 2015, the company plans to raise its revenues by 2%, and the aggregate exports to foreign operators by as much as 70%. The recent growth of Škoda Transportation testifies that the company is much successful on the market, and has the required preconditions for achieving its results set (Bloomberg 2015).

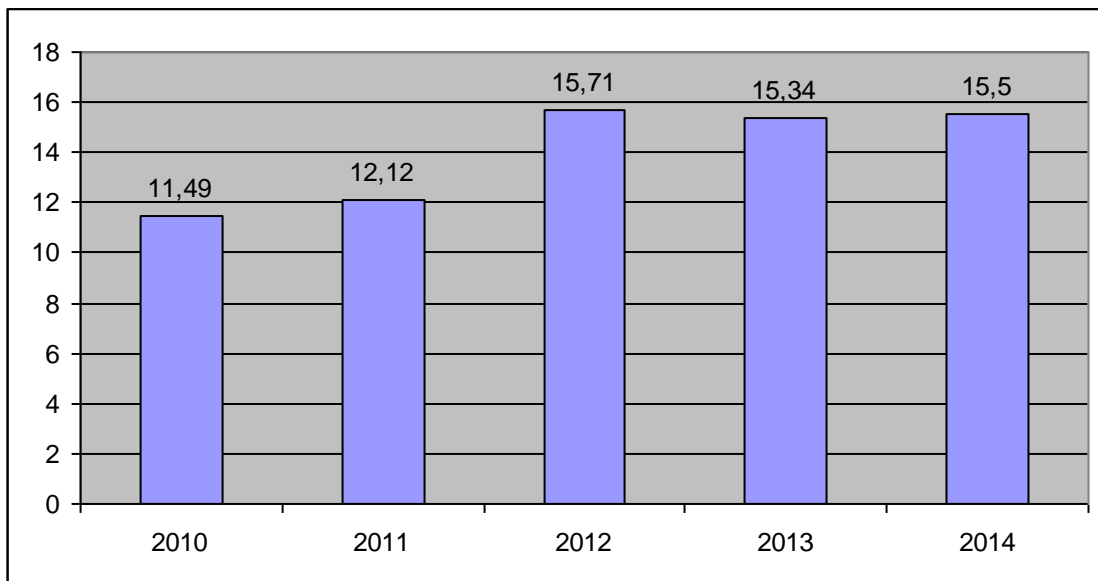
3.4.1 Key market indicators

For the purpose of investigating the key market indicators of Škoda Transportation, figures from the company's financial statements need to be analyzed. They are given in Table 3 below.

	2010	2011	2012	2013	2014
Total sales	11.49	12.12	15.71	15.34	15.5
Gross profit	4.52	5.77	6.14	5.96	5.21
Net profit	2.06	2.26	2.57	2.05	1.7
Gross profit margin	39.34%	47.61%	39.08%	38.85%	33.61%
Net profit margin	17.93%	18.65%	16.36%	13.36%	10.97%

**Table 3. Selected financial indicators of Škoda Transportation, in CZK billion
(Helgi Library 2014)**

- total sales



**Figure 13. Dynamics of Škoda Transportation's total sales, in CZK billion
(Helgi Library 2014)**

As can be seen from Figure 13 above, the total sales of Škoda Transportation have lately remained at a stable level, after the significant increase which occurred in 2011-2012. This tendency is positive for the company, as it testifies its ability to maintain effective operating activities on the market.

- **annual growth (AG)**

$$AG_{2014/2013} = (TS_{2014} - TS_{2013}) / TS_{2013} = (15,5 - 15,34) / 15,34 = 0,01$$

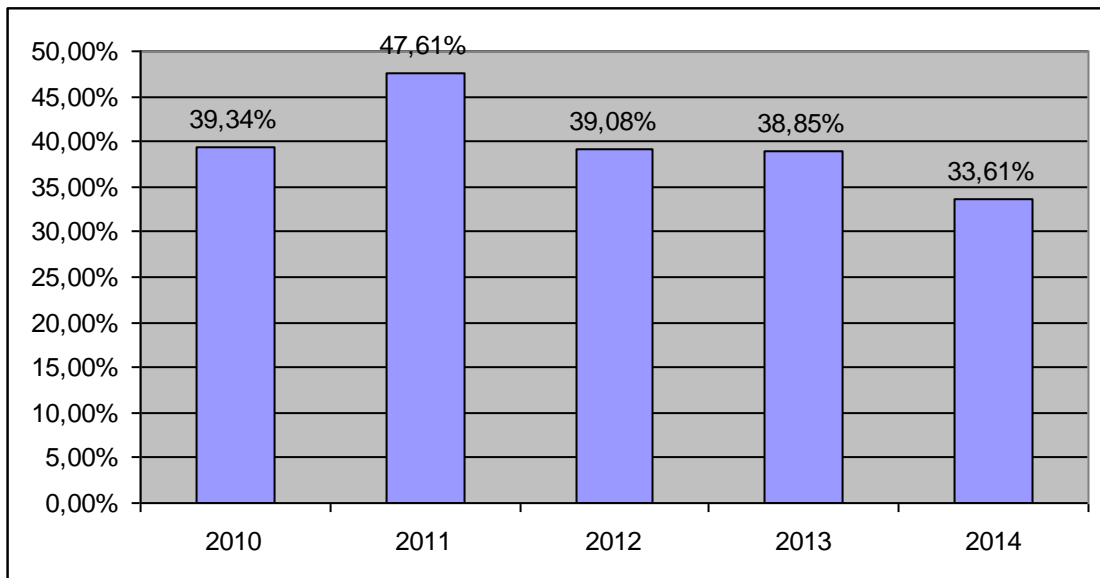
The annual growth of Škoda Transportation's sale in 2014 as compared with 2013 amounted to 1%, while the average annual growth in the period from 2010 to 2014 made up 8.5%. The calculation of that figure can be achieved by summing up the company's indicators for the years 2010-2014 and by dividing their aggregate amount by the total number of years. Those figures prove that the company has lately been able to steadily increase its sales, which is a positive tendency for it

- **compound annual growth rate (CAGR)**

$$CAGR(t_{2010}, t_{2015}) = (15,5 / 11,49)^{\frac{1}{2014-2010}} - 1 \approx 7,8\%$$

Škoda Transportation's compound annual growth of 7.8% in the period from 2010 to 2014 further testifies that the company is gradually increasing its sales at a rapid pace each year, thus achieving higher market results.

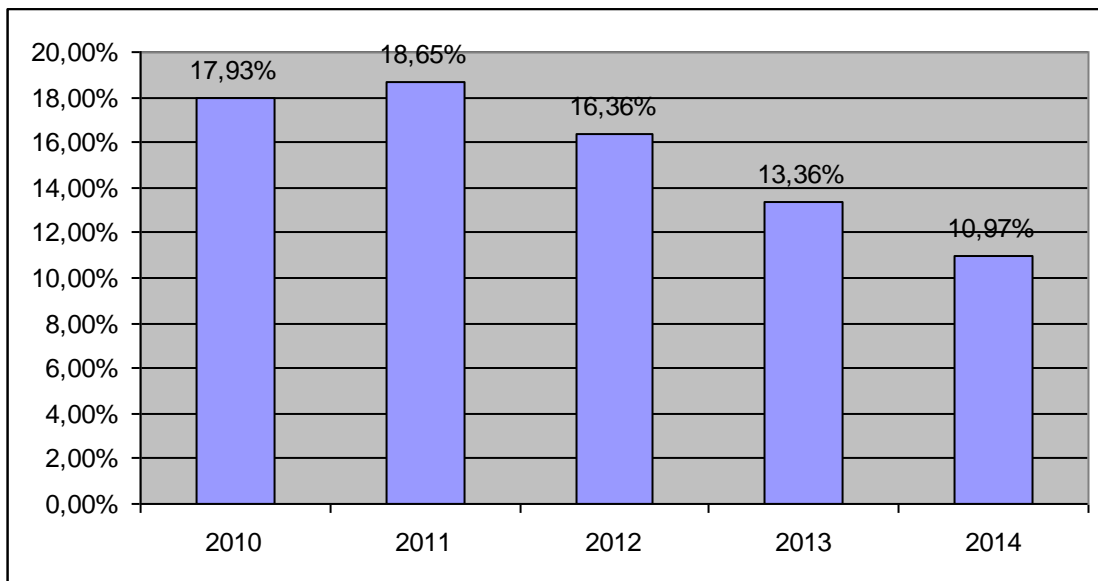
- **gross profit margin**



**Figure 14. Dynamics of Škoda Transportation's gross profit margin
(Helgi Library 2014)**

As can be seen from Figure 14 above, Škoda Transportation's gross profit margin has constantly remained above 30% in recent years. Even despite the slight decrease in the last few years, it can be stated that the company's gross profit margin is effective for its steady long-term financial position.

- **net profit margin**



**Figure 15. Dynamics of Škoda Transportation's net profit margin
(Helgi Library 2014)**

As Figure 15 above illustrates, the net profit margin of Škoda Transportation has lately steadily remained above 10%, which means that the company effectively generates net earnings on the market. However, the recent decrease of the net profit margin from 18.65% to 10.97% is negative for the company, as it means that the effectiveness of its activities has decreased.

Taking into account the findings of the market analysis of Škoda Transportation, in the next chapter of the thesis, I will develop my recommendations for the company to improve its market position.

3.4.2 PEST analysis

Within the framework of PEST analysis, we should investigate more in detail the external environment of Škoda Transportation's activities in the Czech Republic, as the country is the corporation's greatest sales market, and thus the ultimate success of all Škoda Transportation's business operations is largely predefined by its effective activities on the Czech rolling stock market. Moreover, the Czech political, social, technological and economic factors can make a good review of the other European

markets as the rules and directives as well as the dynamics have much in common with other European countries.

Political factors

The political situation in the Czech Republic is favorable for the development of effective business activities. Major steps on the way toward the formation of the market economy and free competition in the Czech Republic were formed in the early 1990's, and were subsequently improved as the Czech economy became largely liberalized with the accession to the European Union, and the harmonization of the Czech legislation with the legislation of the EU in all respects (Market Research Reports 2015, Czech Republic). Thanks to this, the political situation has lately remained stable in the Czech Republic. Minor disputes exist between the President and the Prime Minister in the field of foreign political relations, however they do not anyhow affect the investment climate in the Czech Republic, and doesn't hinder the development of effective business activities in the country (The Spectator 2015, Vaclav Klaus: the West's lies about Russia are monstrous).

Economic factors

Thanks to the conditions described above and thanks to the steady development of the Czech Republic, the economic environment in the country is much favorable for business activities.

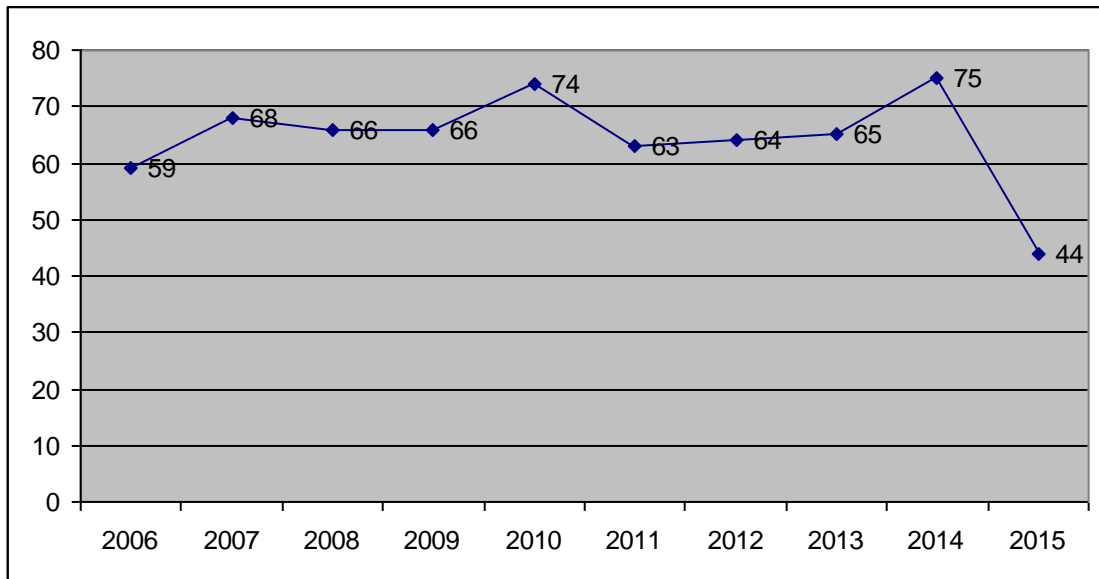


Figure 16. Positions of the Czech Republic in the Ease of Doing Business Ranking in 2006-2015
(Ease of doing business index 2015)

As Figure 16 above illustrates, in 2015, the Czech Republic achieved its highest position in the global Ease of Doing Business ranking, which only further testifies the country's attractiveness for the performance of business activities.

Social factors

In social terms, the market of the Czech Republic is favorable for investors as well. First of all, it should be noted that the average income of the Czech population are among the highest in Central Europe, just as the level of education. At the same time, average wages are lower than in Western Europe, and therefore manufacturers can find qualified workers at costs lower than the ones required for hiring personnel in Western countries. Finally, the Czech population tends to buy products manufactured in the Czech Republic, which favors the business activities run by local entities (Market Research Reports 2015, Czech Republic).

Technological factors

Technological factors play also a significant role in evaluation of the overall situation and market analysis of the rolling stock market. Modern society pays great attention to the technological and technical factors especially connected with transportation and relative spheres. Innovation and requirements on environmental policies all over the world make a significant stress on rolling stock and transportation manufacturers and require innovated, economic and efficient technical approaches to the processes and results of manufacturing.

It is also particularly worth noting the external conditions of Škoda Transportation's activities on the markets of China and Latin America which are believed to be the most prospective ones for the corporation in the future. Thus, in political terms, China is much more stable than Latin America, while in Latin America, changes of the political regime occur more often, and therefore the level of investors' certainty in the political situation is considerably lower. In economic terms, both China and Latin America aim to provide investors with great opportunities for the development of their business activities in the countries. In China, the use of free-trade zones is particularly popular, while Latin American countries attract investors by offering them with significant tax and other advantages. As for the social factors, it is worth noting that the standards of living are much lower in both China and Latin America as compared with developed Western countries. Due to this, the local employees' requests are significantly smaller, and companies get an opportunity to hire employees at lower costs. In technological terms, China is one of the world's greatest innovators. The country has its own powerful R&D basis, and aims to significantly incite the research and engineering activities performed by foreign companies on its territory. At the same time, Latin American countries are great recipients of foreign financial aid and development assistance, thanks to which their sector of technological innovations is significantly boosted as well. Overall, it can be stated that the PEST environment is favorable for the development of Škoda Transportation's activities on the markets of both China and Latin America.

Overall, the findings of PEST analysis allow stating that the external environment in the Czech Republic is much favorable for the development of business activities by Škoda.

3.4.3 Porter's five forces analysis

- Threat of new entrants

As the information above testifies, the threat of new entrants on the Czech rolling stock markets is rather low, particularly taking into account Škoda Transportation's strong market position, the company's partnership ties with Czech railway operators, and the great investment required for starting running the production of rolling stock. The threat of the possible entry of foreign companies is rather low, as Škoda Transportation offers competitive prices and to a large extent controls the Czech rolling stock market;

- Threat of substitute products

The threat of substitute products is rather medium. On the one hand, Škoda Transportation's competitors on the Czech market offer similar products which may potentially substitute the ones of Škoda Transportation, but on the other hand, the number of such companies and their respective substitute products is limited. Moreover, Škoda Transportation intensively invests in R&D, and therefore is among the first companies to introduce market innovations.

- Bargaining power of customers

The bargaining power of customers in the Czech Republic is medium. On the one hand, they are very limited in number, and the greatest part of demand is dominated by České dráhy a. s. On the other hand, the switching costs are high, and the concentration of rolling stock manufacturers in the Czech Republic is low;

- bargaining power of suppliers

The bargaining power of suppliers on the Czech market of rolling stock is rather medium. The distribution channels in the country are well developed, but the equipment used for the production of rolling stock is purchased from a limited number of suppliers, which increases the manufacturers' switching costs;

- intensity of competitive struggle

The intensity of competitive struggle on the Czech market is rather medium. Škoda Transportation dominates the Czech rolling stock market in terms of sales and profits, but at the same time the effectiveness of rolling stock manufacturers' activities

is greatly predefined by the effectiveness for their research and development operations, and their ability to introduce innovations in their products.

Thus, the analysis of Škoda Transportation’s competitive environment under Porter’s five forces model testifies that the level of competition on the Czech rolling stock market is rather medium, and the company is able to effectively maintain its effective positions on it.

3.4.4 SWOT analysis

The SWOT analysis of Škoda Transportation’s business activities is required for the purpose of understanding how the company is able to withstand the competitive impact on the Czech and international rolling stock market, and thus how strong its positions are for maintaining and further improving its global leadership positions in the industry.

<p><i>Strengths</i></p> <ul style="list-style-type: none"> - Leading position on the Czech rolling stock market - High quality of products - Qualified staff - Effective organizational structure - Deep research and development activities - Steady demand on the part of Czech public companies 	<p><i>Weaknesses</i></p> <ul style="list-style-type: none"> - Limited range of rolling stock items offered - High dependence on the demand of the Czech public railway operator - Dependence on imported spare parts use in the production of rolling stock
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> - Steady capacity of the Czech rolling stock market - High demand for Czech rolling stock abroad - Optimization of the Czech tax legislation - Czech Republic’s competitive tax rates as compared with other EU member states - Growing development of Czech technological universities, and the added value they give to graduates in terms of their skills 	<p><i>Threats</i></p> <ul style="list-style-type: none"> - Greater investment in innovations on the part of Western companies - Declining aggregate market capacity - Declining exports of Czech rolling stock to foreign states - Growing impact of local competitors

**Table 4. SWOT analysis of Škoda
(Škoda Transportation a.s. 2015)**

As can be seen from Table 4 above, Škoda Transportation has some major competitive advantages on the Czech rolling stock market.

Namely, the company's strengths are as follows:

- The company is the absolute leader in the industry in the Czech Republic;
- The steady demand on the part of Czech public companies which is largely due to the great quality of the corporation's products contributes to its effective financial results and steady competitive position;
- The company's internal processes and procedures are built very effectively;
- It employs skilled staff, and is a major market innovator, which allows it overcoming its competitors.

However, at the same time, Škoda Transportation has some drawbacks, namely as compared with some of its competitors based in other EU member states. Namely, its main weaknesses are as follows:

- The corporation's product range on the rolling stock segment is rather narrow;
- It largely relies upon the demand of the Czech public railway operator and Prague Integrated Transport company (PID), and in case of any major economic problems in those companies, Škoda Transportation would be likely to have some considerable losses of profit;
- The company imports part of the technological equipment for its rolling stock products from Western European countries, and thus is significantly dependent upon foreign suppliers.

The great opportunities for Škoda Transportation's successful market development in the future are represented by the following factors:

- Steady domestic demand for rolling stock in the Czech Republic;
- Growing demand on the part of foreign buyers;
- The Czech tax legislation has lately undergone major changes which contribute to the overall reduction of the tax burden borne by Czech companies, especially as compared with Western European states. Namely, it should be noted here that the taxation of companies has been significantly simplified lately in the Czech Republic. Moreover, in 2014, the income tax on capital gains was abolished for the amounts of up

to CZK 100,000 which may promote investors' interest in the cooperation with Škoda Transportation. When comparing the VAT rates in the Czech Republic and developed EU member states, it can be stated that those rates are quite competitive in the Czech Republic. For instance, as of today, the basic VAT rate in the country makes up 21, while in Italy, it amounts to 22%, in Sweden – to 25%, in Denmark – to 25%, while it is slightly lower in the UK (20%) and Germany (19%). As for the corporate income tax rate, it amounts to 19% in Czech Republic, while it makes up 22% in Sweden, 23% in the UK, 30% in Spain, 30.175% in Germany, and 33.3% in Spain. This testifies that the Czech legislation favors the financial effectiveness of Škoda Transportation's business activities;

- Finally, science intensively develops in the Czech Republic, particularly thanks to the research activities run by Czech universities.

However, there are also some threats to the expansion of Škoda Transportation. Those are namely the following:

- Growing impact of local competitors;
- Active research and development activities run by foreign Western companies;
- Overall declining capacity of the global rolling stock market.

The results of the SWOT analysis of Škoda Transportation on the Czech rolling stock market prove that the market is highly competitive, but the corporation has great growth prospects, and its advantages allow raising the actual effectiveness of its financial results reached through business activities.

3.5 Recommendations and suggestions for Škoda Transportation

When developing recommendations for Škoda Transportation to improve its market position and financial results, it should first of all noting that the company is already successful in its market activities as of today, and therefore should further continue pursuing its current course of business activities for the purpose of achieving great results in the future. However, at the same time, the company could make improvements which would help it further increase those prospective results.

Taking into account the fact that the demand on the Czech rolling stock market is largely dominated by a single company, and its needs in new products are rather much limited, the first recommendation for Škoda Transportation would be to further investigate the opportunities of expanding to the markets of foreign countries. As of today, the company already plans to increase its exports by 80% by the end of 2015, and it should focus on achieving this figure, and further increasing it in the future. Škoda Transportation's expansion to foreign markets would help the company increase its profit margin, and further raise the production of rolling stock.

As the level of competition in the rolling stock industry on the European market is generally higher as compared with the Czech Republic, the management of Škoda Transportation should invest in effective marketing activities. This is a key prerequisite for making customers abroad learn more about the company, its products, and their quality. Direct contacts with representatives of European railway operators would help Škoda Transportation significantly expand its customer base, thanks to which the company would be able not only to improve its financial results, but also to achieve stronger positions in the international rolling stock industry. Taking into consideration Škoda Transportation's competitive prices as compared with the other European rolling stock manufacturers, the company would have prospects to effectively enter the foreign markets with its products.

Moreover, in addition to the European rolling stock market, Škoda Transportation could also attempt to enter the rapidly developing markets of Asia and Latin America, where the need in high-quality rolling stock is ever-growing. This would require significant investment on the part of the company, but in the long run, this would help not only strengthen Škoda Transportation's market position and financial conditions, but would also contribute to the diversification of the company's operating and financial risks.

Another important factor which Škoda Transportation should focus on for the purpose of improving its market results is the investment in research and development activities. As it has already been stated earlier in this thesis, the level of effectiveness of R&D largely predefines the strength of any company's positions in the rolling stock industry. Against the background of the rapid technological progress, Škoda Transportation should effectively invest in research and engineering for the purpose of

not lagging behind its competitors, and for further increasing its competitive advantages in the global rolling stock industry.

In case that Škoda Transportation is able to effectively implement all those recommendations, the company will be able to further increase its financial results and expand the customer base all over the globe, thus ensuring leading positions on the global rolling stock market.

4 Conclusion

Market analysis is an important tool for investigating the key parameters, vectors and trends in a particular sector or industry. The aims of market analysis include the investigation of market size, growth rate, level of competition and structure of competitors, distribution channels, key factors predefining the success of a company's market activities. The results of market analysis allow making wise managerial decisions, and therefore effectively placing a company's funds, thus reducing unnecessary and superfluous expenses, and raising the possible level of economic benefits gained. Therefore, running a thorough and detailed market analysis is a prerequisite for effectively learning the specificities of a particular industry, and thus for developing effective strategies for entering it and withstanding the level of competition on it.

The tools and techniques used for market analysis can significantly differ depending on the aims and goals pursued by a particular company when implementing such analysis. The information gathered in the course of market analysis includes both secondary data collectible from bibliographic sources, market and business reports, various research papers, etc., and primary data which include empirical information gathered in the course of the respective company's own activities aimed to collect practical data regarding the respective industry. The findings of market analysis are used by corporate managers for the purpose of developing and amending the strategies and operating tactics of market expansion, and for effectively withstanding the impact of market competitors.

Rolling stock is commonly referred to as the vehicles which move on railways. Therefore, this term includes vehicles such as locomotives, diesel multiple units, various types of cars, containers, etc. As railway transport is one of the most important means of transport for the transportation of both cargoes and passengers on the global scale, it is particularly worth analyzing the current trends in the industry, and its potential development in the future.

As of today, the annual global volume of the rolling stock market approximately amounts to over USD 35 billion, and China is the global leader in terms of the freight and passenger carriages performed by railway transport. The major corporations manufacturing rolling stock are located in China as well. Thanks to its industrial power,

the country has lately been able to become the world's leader in terms of the revenues generated from both sales of new rolling stock and the after-sales services provided to customers. The rolling stock market is also well developed in Western and Central Europe and North America, where countries have a high level of technological development, and therefore are able to invest significant amounts of funds in the production of rolling stock for maximizing its effectiveness, and for improving the quality parameters of the vehicles manufactured. In Eastern Europe, significant production capacities exist, and numerous facilities are functioning, but the level of technological equipment is rather outdated in most cases, and therefore the rolling stock market in those countries most often produces obsolete vehicles, which are unable to cope with the current demands existing on the international level. In Latin America and Asia, the rolling stock market is less developed, except for particular countries which are major manufacturers of rolling stock, for instance such as China or India.

In the near future, decline of the global rolling stock market is expected by experts as a result of the growth in other means of transport in the global structure of transportations. This may lead to a major decrease in the production of rolling stock worldwide, and also may lead to a shift in the geographic structure of production in the global rolling stock industry.

The analysis of the Czech rolling stock market has shown that its overall performance is better than the average on the global market. A particularity of the Czech rolling stock industry consists in the fact that it is to large extent dominated by a single company namely Škoda Transportation, and the demand is generated by the national operators of Czech railways.

Škoda Transportation has lately been able to steadily maintain its high market results, and thus steady position in the Czech rolling stock industry. The company manufactures a wide range of rolling stock items of high quality and at competitive prices, thanks to which it is able not only to dominate the domestic Czech market, but also to effectively expand its activities to foreign markets. As the analysis has revealed, the level of competition in the Czech rolling stock industry is medium, and the threat of new entrants is low, thanks to which Škoda Transportation will be likely to further maintain its strong market positions in the future.

For the purpose of further improving its competitive advantages and financial results, Škoda Transportation should focus on expanding its partnership ties with foreign railway operators, and on growing the volumes of exports to foreign states. Taking into account the great competitive advantages of Škoda Transportation, the company could export its rolling stock products not only to other EU member states, but also to the dynamically developing countries of Asia and Latin America. Namely, the company should focus on the markets of China, India, and Brazil which have lately been demonstrating rapid economic growth, and therefore currently require ever-growing supplies of rolling stock for developing their transport infrastructure. As the research within the framework of this thesis testifies, those countries' markets will be likely to demonstrate the highest growth in the near future, and therefore they could contribute much to Škoda Transportation's improved financial results.

Finally, the company should maintain and subsequently increase its investment in research and development, as the level of innovative activities largely predefines any company's position in the rolling stock industry. In case that the company succeeds in fulfilling those recommendations, it will be likely to further improve its positions on the global rolling stock market.

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