OPTIMAL TURNOVER OF COMPANIES IN ROAD FREIGHT TRANSPORT AS A TOOL OF EFFICIENCY AND COMPETITIVE ADVANTAGE

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Abstract: The transport sector plays a significant role in ensuring the competitiveness and sustainable economic growth in Europe. There are a number of studies dealing with competitiveness in transport. Most of them are based on the total set of transport. These method combine both qualitative and quantitative aspects. The result is quality criteria that optimize consumer and economic parametres to increase company's competitiveness.
This paper examines the relationship between turnover and efficiency related to competitiveness by focusing on Czech companies in road freight transport. Many firms face financial problems. The aim of the paper is to determine whether turnover affects companies' efficiency and what level of turnover related to competitiveness achieves the maximum efficiency. Efficiency is measured by synthetic indicator IN05. The relationship between turnover and efficiency is tested by Chi-square test of independence, and the Kruskal-Wallis test measures any differences between the different groups in enterprise turnovers. This knowledge should help set the optimal turnover for businesses to achieve a competitive advantage. Research of a sample of 2,536 companies confirmed that the turnover of the company influences its financial results. The results of the calculations show that the best efficiency was achieved by companies with an annual turnover of €194 – €388 thousand.

Key words: competitiveness, efficiency, transport, optimal company turnover, IN05 index, road freight transport.

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Introduction

The transport sector plays a significant role in ensuring the competitiveness and sustainable economic growth in Europe. Nugraha et al. (2020) reveal that infrastructure has a positive effect on economic growth. One of the main objectives of the European transport strategy, as outlined in its 2011 White Paper, is to help establish a transport system that enhances the competitiveness of European countries (Purwanto et al., 2017). Over the last 30 years, the competition in road transport has increased significantly (Poliak et al., 2021).
The transport sector is a significant source of sustainable economic growth. Equally important is the sustainability of the transport sector within itself. Sustainability relates to efficiency and competitiveness. This paper tests efficiency related to

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turnover to achieve competitiveness by focusing on Czech companies in road freight transport.

This contribution comes in response to the fact that many road freight companies face the problem of sizing their vehicle/truck fleet so that they have sufficient sales for their services. Given that the size of the vehicle/truck fleet also depends on turnover, this study can help map how companies in this sector perform at different levels of turnover. If managers receive information on the optimal turnover in this sector, they can plan the size of their vehicle/truck fleet accordingly to achieve greater efficiency and competitiveness. This will also help them make crucial investment decisions as well. The paper aims to map all companies operating in the field of road freight transport, for which data will be collected (2536 companies), in order to guarantee the accuracy of the results.

Literature Review

This study employs methods of competitiveness assessment and considers factors influencing competitiveness, competitiveness related to efficiency, and the turnover of companies in the transport sector.

There are several methods designed to assess competitiveness in the transport sector. Lazausias et al. (2012) propose calculation of the competitiveness of road transport enterprises upon taking into consideration the total set of services within a model to assess the competitiveness of road transport enterprises. Moster and Limbourg (2016) and Zawieska (2015) approach generic mathematical functions for the external costs of transport. Moroz (2020) develops and tests a method for assessing the level of competitiveness of motor transport enterprises. This method applies a combination of qualitative and quantitative aspects of the research including the weight of individual indicators. Mendoza and Roman (2017) present a method based on the virtual efficiency DEA model. Krasnyanskiy and Penshin (2016) present the criteria of quality to ensure competitiveness within transport services. A model to optimize consumer and economic parameters to increase companies' competitiveness is proposed by Sandal et al. (2021). Oladimeji and Udosen (2020) suggest diversification as catalyst of achieving competitive advantage. In addition, Novák Sedláčková et al. (2019) present the profit generation of airports in the Slovak Republic.

Several factors influence the competitiveness of the transport industry. It is possible to categorize companies into groups as follows: consumer and customer needs, infrastructure, environmental, macroeconomics (incl. government decisions), microeconomics, financial management decisions, and others. Batarliene et al. (2017) and Jaździk-Osmólska (2014) describe transport companies as operating in human resource management.

The results of a quantitative study carried out in Lithuania revealed that, when increasing the competitiveness of transport companies, the main focus should be placed on the customer (Ginaviciene and Sprogyte, 2016). Braga et al. (2021) show similar factors that influence competitiveness, such as a distance, time, reliability,

and environmental issues, while Isaev et al. (2017) list the possibility for different directions, financial services, flexibility of the pricing, and insurance. Poliak et al. (2021) demonstrate that appropriate transport direction increases competitiveness. Economic advantage is combined in transport with convenience for customers (Carboni and Dalla Chiara, 2018). The trade volumes and transport costs of alternative transport influence competitiveness (Tsui et al., 2018).

Some authors suggest the logistic chain and connectivity as key factors in increasing of competitiveness (Vasquez et al., 2018; Gunderersen et al., 2017; Mullen and Marsden, 2015; Cortes-Villafradez, de la Pena-Cardenas, 2019; Pietrzak et al., 2020, Muangmee et al., 2022). Lunka (2022) suggests the transition to low emission mobility to more sustainable transport modes.

Igorevich et al. (2018) specify as a key indicator to find balance between the level of openness of the economy and the system of regulation access to foreign procedures in accordance with the modern practice of international economic relations. Kedzior-Laskowska (2020) identifies the significant role of internationalization in service quality and competitiveness in the transport sector. Belova et al. (2018) and Dolinayova and Domeny (2022) suggest applying a sustainable governance model for the evaluation of competitiveness advantage. Poliak et al. (2019) identify the impact of the adoption of the CMR Protocol on the competitiveness of the carriers. Financial crises also influence competitiveness (Tsui et al., 2018).

Isaev and Megey (2018) provide methods of assessing competitiveness, asserting that a communication method based on the emotional theory of sales is the most effective. According to the emotional theory of sales, the choice of a product is influenced not only be the characteristics of the "main product" but also the characteristics of the additional so-called "integrated products". Isaev and Megey (2019) continued their research using decision-making theory, which relies on the emotional sales theory and qualimetry. Isaev and Isaeva (2020) and Dzikowski (2022) proposed another methodology for assessing the competitiveness of companies based on the theory of the choice of goods as a complex of integrated transport products.

External cost has been a key issue (Moster and Limbourg, 2016). The method of determining the competitiveness of freight transport services, developed by Yaraskova and Hoshimov (2021), is based on the system of indicators for assessing the competitiveness of freight transport services and includes cost indicators.

Many studies specifically address the efficiency and competitiveness of transport. For example, Ballantyne, Lindholm, and Whiteing (2013) refer to inconsistencies in management between local authorities and stakeholders that lead to inefficiency. In the field of transport, Basso and Silva (2014) deal with sustainability (competitiveness) and efficiency. Vigren (2016) also discusses transport, asserting that cost efficiency is lower if a contract is operating in areas with high population density or if the traffic is supplied by a publicly owned operator without using competitive tendering. The role of competition in achieving efficiency is also addressed in Karlaftis (2010) in his paper entitled "Ownership and competition in

European transit." According to him, efficiency increases in a competitive environment.
If efficiency affects competitiveness, then it is necessary to test which variable increases efficiency. This article is focused on the size of the company as a variable influencing the resulting efficiency and thus competitiveness. The size of the business will be tested in two steps. In the first step, the hypothesis will be tested whether the size of the company affects efficiency at all: H1: Turnover of companies in road freight transport in the Czech Republic expressed as total revenues affects the efficiency expressed by Index IN05. If this hypothesis is confirmed, the next step will be to find the indifference point, i.e. optimal size of the company in road freight transport. This paper aim at two goals – confirmation of hypothesis H1 and determination of optimal level of turnover in road freight transport.

Research Methodology and Data

There are two main goals to be tested. The first one is a test of whether the turnover of companies affects efficiency, and if so, it will be used to calculate the optimal size of the company. The size of the companies is considered in its turnover; the total sum of assets is less reliable due to the many leasing contracts in this sector, and the number of employees is also not reliable due to the presence of part-time workers. Efficiency is calculated by Index IN05.
The first step is to obtain the dataset of the companies. The data were obtained from the MagnusWeb database in the road freight transport sector and were selected based on the turnover criterion in the year 2020. Financial data from the financial statements were divided into six groups according to the size of enterprises (their turnover). Subsequently, the index IN05 for each enterprise was calculated and the average values of this index between the groups were compared with each other.
The second step is a calculation of efficiency by the synthetic indicator IN05. The ROE indicator and synthetic indicators were considered in the selection of methods. According to Kuběnka and Myšková (2019), the ROE indicator did not prove to be very reliable for prediction. In 2016, they published a study that addressed the question of whether it is possible to predict ROE using a bankruptcy model. To answer this question, the research was carried out in 2016 including nearly 900 companies operating in the manufacturing industry. The goal was to confirm or disprove interdependence between the ROE values to the values of the bankruptcy model. The study demonstrated no statistically significant linkage between the value of bankruptcy model and the prosperity of the business in the following year, expressed by ROE values, for why a synthetic indicator was chosen. Regarding the accuracy of synthetic indicators, the accuracy of model IN99 is 47% and IN05 95% (Eason, 2011). With this accuracy, the IN05 (1) indicator ranks the best-rated synthetic indicators for Czech companies (Kuběnka and Myšková, 2019). For this reason, the IN05 index was chosen to determine the financial situation of the analysed companies that was constructed for the Czech environment. Another advantage of the synthetic indicator is that it shows the overall financial situation of

the enterprise. In identifying the threat of bankruptcy, the IN05 index shows the highest success among medium-sized companies, but the mentioned index is generally successful for other companies as well (Neumaierová and Neumaier, 2009). The Altman model is inappropriate for central Europe (Delina and Packová, 2013). It is necessary to modify the Altman model for application to Czech firms (Pitrová, 2011).

$$IN05 = 0.13\frac{Assets}{Liabilities} + 0.04\frac{EBIT}{Paid\ interest} + 3.9\frac{EBIT}{Assets} + 0.21\frac{Revenues}{Assets} + 0.09\frac{Current\ assets}{Short-term\ liabilities} \quad (1)$$

he negative coefficient of the asset-liability ratio reveals that the debt burden inhibits a firm´s productivity (Sung and Wang, 2014). The limits of the IN05 index are set as a 0.90 lower limit and a 1.60 upper limit. According to a survey (Neumaierová and Neumaier, 2009), there is a 97% probability of going bankrupt for companies with an IN05 index below the lower limit. The companies above the upper limit have then a 92% probability that they will not go bankrupt. The companies for which the IN05 index is in the so-called grey zone of 0.90-1.60 have a 50% probability of going bankrupt, i.e., the said test is not suitable for prediction (Balcaen and Oohge, 2006). At the end of the previous second step, the value of IN05 was obtained, and the efficiency was calculated for each of the analysed companies. The third step is the Dixon test for testing the outliers. Dixon´s Q test is used for the identification and rejection of outliers. If outliers were detected in this test, the data would be excluded from the representative sample. Coefficient Q is defined as:

$$Q = \frac{x_n - x_{n-1}}{R} \quad (2)$$

where R is the absolute difference between the outlier in question and the closest number to it. If Q›Qtable, where Qtable is a reference value corresponding to the sample size and confidence level, then the questionable point is rejected (Dixon, 1950).

In the fourth step, the first test checks hypotheses H1. The Chi-square test of independence (2) was used (Hindls, 2007):

$$H_0: n_{ij} = \frac{n_{i.}\, n_{.j}}{n} \quad (3)$$

for i (1,2,3,…) and j (1,2,3,…) with the test criterion value:

$$G = \sum_{i=1}^{r}\cdot \sum_{j=1}^{s}\frac{(n_{ij} - n'_{ij})^2}{n'_{ij}} \quad (4)$$

where n_{ij} are the actual frequencies, n'_{ij} are the expected frequencies, and *i, j* are the numbers of rows and columns.

In the fifth step, the other statistical test Cramer´s V was used to test how strong the independence is. The testing criterion V is defined as follows (Cramer, 1946):

$$V = \sqrt{\frac{K}{n(m-1)}}, \quad (5)$$

where: m = min {r, s}. This coefficient takes the value of 0 and 1. The closer 1 is, the closer the dependence.
For the sixth step, the last statistical test is the Kruskal-Wallis test to determine the differences between the size groups. It is a method for testing whether samples originate from the same distribution. It is used to compare two or more independent samples of equal or different sample sizes. A significant Kruskal-Wallis test indicates that at least one sample stochastically dominates one other sample. It is tested that the medians of all groups are equal, and the alternative hypothesis is that at least one population median of one group is different from the population median of at least one other group. Testing criterion H is defined as follows (Kruskal-Wallis, 1952):

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{C} \frac{R_i^2}{n_i} - 3\,(n+1), \quad (6)$$

where C is the number of groups, ni is the number in a group, n is the total number, and Ri sums of ranks.
If any difference has been found, it is necessary to identify which selections differ significantly from each other (seventh step). An average ranking shall be determined for each of the groups. Groups differ significantly when:

$$R_i - R_j > \sqrt{\frac{n\,(n+1)}{12}\left(\frac{1}{n_i} + \frac{1}{n_j}\right)}\,\chi^2_{\alpha,k-1} \quad (7)$$

In this step, the significant difference founded by means of the Kruskal-Wallis test will be compared and discussed through the groups. All of the calculation procedures are available in the Excel file from the author.
Companies in road freight transport were selected based on the turnover criterion in the year 2020. This is the most up-to-date information available. It was not appropriate to define the size based on the number of employees or the size of assets as mentioned above.
Based on turnover, the companies were primarily divided according to the general categorization of large ones (over CZK 1 billion), medium ones (CZK 200 million – CZK 1 billion), small ones, and micro ones, while small and micro companies were analysed in more detail as follows due to their large number: CZK 30-200 million, CZK 10-30 million, CZK 5-10 million, and CZK 0-5 million. For better clarity for the Euro area, the values in Czech crowns are converted into euros and market A-F as follows: F: large ones (over €38,872 thousand), E: medium ones (€7,774 thousand

€38,872 thousand), D: €1,166 thousand – €7,774 thousand, C: €388 thousand – €1,166 thousand, B: €194 thousand – €388 thousand, A: € 0 – €194 thousand.
Table 1 contains the number of companies in the basic and sample set, while the number of all existing companies is considered within the basic set and the number of companies for which the financial statements were available is considered in the sample set. There are 7,090 companies in the road freight transport (CSU, 2022). Research is provided by 2,536 companies which represents 35.77% of the sample. Table 2 shows basic descriptive statistics of the sample set.

Table 1. Recapitulation of the number of enterprises of the basic and sample set

Name of a group	Turnover in thousands of euros	Basic set	Sample set
A	0-194	2,565	893
B	194-388	843	356
C	388-1,166	2,242	613
D	1,166-7,774	1,264	554
E	7,774-38,872	163	111
F	Over 38,872	13	9

Table 2. Descriptive Statistics

Name of a group	Minimum	Maximum	Average	Standard Deviation
A	-18,12	14,23	4,95	2,26
B	-20,35	12,27	7,71	3,32
C	-4,43	16,21	6,9	1,81
D	-7,30	7,13	-1,97	0,51
E	-33,41	33,16	-16,4	8,30
F	-4,17	3,75	1,07	0,57

Results and Discussion

At the level of significance α = 10%, the independence of efficiency on the turnover of companies in the sector was rejected (3), and the hypotheses was accepted. The given test confirms that there is indeed a level of turnover at which the analysed companies prosper more and vice versa. Gasparik et al. (2018) shows similar conclusion. They consider high capacity as the key factor of competitiveness. Dolinayova et al. (2017) indicate volume of transport as an indicator of competitiveness also. Tsui et al. (2018) present the trade volumes influence competitiveness. The significance of α = 10% was determined because non-parametric tests are not as sensitive as parametric tests. The calculation procedure is shown in Tables 3 and 4. Table 3 shows the actual frequencies n_{ij}, and in Table 4 the expected frequencies n'_{ij} are calculated.

Table 3. Actual frequencies

IN 05 Results/Group	A	B	C	D	E	F	*n.j*
Bankruptcy zone	585	102	210	205	28	4	1,134
Grey zone	134	61	137	187	44	3	566
Prosperity zone	174	193	266	162	39	2	836
ni.	893	356	613	554	111	9	2,536

Table 4. Expected frequencies

IN 05 Results/Group	A	B	C	C	E	F	*n.j*
Bankruptcy zone	399	159	274	247	50	4	1,134
Grey zone	199	79	137	124	25	2	566
Prosperity zone	294	117	202	183	37	3	836
ni.	893	356	613	554	111	9	2,536

According to the test criterion (4), value G = 333.249 was calculated with a critical value $\lambda(1-\alpha)$, (r-1)(s-1) = 15.987. At the level of significance of 10%, the independence of individual characters was rejected and a certain dependence was accepted, i.e., there is a relationship between the size of company and the financial results of the analysed companies.
According to the test criterion (5), the Cramer´s V was calculated as follow:

$$V = \sqrt{\frac{333{,}249}{2536\,(3-1)}} = 0{,}25.$$

This result shows a looser dependence.

$$H = \frac{12}{2529(2529+1)}\ 4\,229\,308\,311 - 3\,(2530\,) = 341{,}973$$

Hypotheses H1 was confirmed: Turnover of companies in road freight transport in the Czech Republic expressed as total revenues affects the efficiency expressed by Index IN05.
Several other studies have been performed on efficiency in the transport sector.
According to Gasparik et al. (2018) high transport capacity is the key factors of competitiveness. Dedik et al. (2018) introduce relationship between efficiency and competitiveness or the market environment, while others believe that efficiency depends on optimally chosen fares, i. e. Borjesson, Fung, and Proost (2017).
Dolinayova et al. (2017) develop the indicators that indicate competitiveness in the transport market, such as the volume of transport and traffic performance.
The optimal company size is different in each sector, and it depends on reaching the break-even point at which total cost and total revenue are equal.
Some other studies show turnover (size of the enterprise) as a key factor of efficiency. A company with insufficient turnover is unable to reach this break-even

point due to high fixed costs and then faces a loss (Tucker, 1963). Valaskova et al. (2021) show the dependence of total indebtedness ratio on the size of the enterprise. Chandrapala (2013) investigates firm size on earnings and book value. Hudakova et al. (2019) analyses business risks on the size of SMES in Slovakia.
Conversely, a company with too much turnover shows declining returns to scale. The law of diminishing returns, i.e., the law of diminishing marginal product, is a property of a production process in which the marginal product of each factor of production decreases with the addition of each additional unit of that factor as long as the other factors of production remain at the same level. Mathematically, this means that, within the scope of the law, the second partial derivative of the production function according to each production factor is negative (in other words, production is a concave function of each individual factor). It is not a generally valid law in the sense of the natural sciences, yet the law of diminishing returns applies in practice very often, at least from a certain level of the factor of production. The well-known economist Samuelson stated that, "The law of diminishing returns is a fundamental principle of economics" (Samuelson and Nordhaus, 2001). The concept of diminishing returns can be traced back to the concerns of Adam Smith (1977). The above economic laws apply not only to manufacturing companies but also to businesses in the field of services, in this case road freight transport.
The effectiveness expressed by the IN05 index is shown by the following test results to find out at what turnover companies achieve the most efficiency.
The test criterion value Kruskal-Wallis test H (6) is 341.973. The critical value is 330.506. A difference was found between the individual groups. This means that the dependence of efficiency on the size of the enterprise has been reaffirmed. The next step is to find out what pair caused the detected difference (Table 5).

Table 5. Differences though the groups

Group	A	B	C	D	E	F
A	x	710,061428	556,055575	384,236386	514,646105	352,407366
B		X	154,005853	325,825041	195,415323	357,654062
C			X	171,819188	41,4094697	203,648208
D				X	130,409718	31,8290203
E					X	162,238739
F						X

Note: Critical criterion is 695,479 (6)

Statistically, the difference between the turnover of €0 – €194 thousand and the second group of €194 – €388 thousand was confirmed. The most distinct groups seem to be €0 – €194 thousand, €194 – €388 thousand, €0 – €194 thousand, and €388 – €1,166 thousand, although group €0 - €194 thousand and €388 - €1,166

thousand do not reach. Indeed, a business of the smallest possible scale is different from a business with a higher turnover.
The following text defines the size at which the companies prosper and, conversely, at which size the company has financial problems. For companies (see in Table 1), index IN05 was calculated, which was averaged for individual categories of company size. The results are shown in Table 6. The values of IN05 are only averaged, but this is done based on previous statistical tests, which confirmed both the dependence of size on efficiency and the diversity of groups. This simplification therefore reflects previous statistical calculations and is not entirely random. Only enterprises in groups B and C achieve prosperity zones, as shown in Table 6. In Group A, the enterprises with the lowest turnover are in the bankruptcy zone as well as enterprises that exceeded the turnover of €1,166 thousand.

Table 6. Results of the IN05 index at individual turnover levels

Group	Turnover in thousands of euros	Number of analysed companies	Average IN05 index
A	0-194	893	-4.95
B	194-388	356	7.7
C	388-1,166	613	6.9
D	1,166-7,774	554	-1.97
E	7,774-38,872	111	-16.4
F	over 38,872	9	1.07

Small freight forwarders play a significant role in increasing competitiveness. Small enterprises themselves create a competitive environment, but regarding their efficiency, the enterprises with the smallest turnovers are not necessarily competitive. It cannot be stated that the smaller the business, the better.
The results of the calculated average values of the IN05 index shown in Table 6 indicate that the highest values, i.e., the most favourable financial results, are achieved by companies in groups B and C. Micro companies, which do not reach even €194 thousand in annual turnover, are too small for road freight transport, while companies over €1,166 thousand in annual turnover are already too large. This means that returns to scale are beginning to show in the case of turnover over €194 thousand, but they are not any longer after reaching the limit of €1,166 thousand. This trend is also evident in Table 7, which shows the percentage of financial results of the IN05 index within individual company sizes. The highest proportions are shown in bold. While as much as 66% of the companies A are in the zone of bankruptcy, companies B and C are most often in the zone of prosperity. The situation for the companies with over €1,166 thousand annual turnover is deteriorating again to the level of the bankruptcy zone, or the grey zone, where performance is impossible to predict.

Table 7. Relative frequency

Group	Number	Bankruptcy zone	Grey zone	Prosperity zone
A	893	66%	15%	19%
B	356	29%	17%	54%
C	613	34%	22%	43%
D	554	37%	34%	29%
E	111	25%	40%	35%
F	9	44%	33%	22%

Larger size reduces productivity, according to the empirical evidence from U.S. plants reported (Syverson, 2004, Nguyen, 2020). Melitz and Ottaviano (2008) published that the large size of enterprises has a positive effect on enterprise productivity. Two studies offered two points of view. This study proved that it is not possible to say in general whether maximizing or minimizing the size of the company is best. Not one extreme has proved effective. It is therefore necessary to examine the individual sectors separately, which could be another direction for this research. Although the research was aimed at determining efficiency related to competitiveness, it revealed that 66% of enterprises with a turnover of up to €194 thousand, 37% of enterprises with a turnover of €1,166 - €7,774 thousand, and 44% of enterprises with a turnover of more than €38,872 thousand were in the bankruptcy zone (for the period 2020). Only about half of the enterprises with a turnover of €194 - €1,166 thousand are in the prosperity zone.

Conclusion

The assumption that financial results in the monitored sector are affected by size was statistically proven. Based on this result, it made sense to deal with the optimal size at which companies in the sector achieve the best financial results. Thus, our hypothesis was confirmed: H1.

Since the optimal company size is different in each sector, it was appropriate to define a narrower sector with a sufficiently large representative sample to achieve the most accurate results. Thus, a total of 2,536 companies operating in road freight transport were included in the calculations, which corresponds to a sample of 35.77% of the basic set of all companies operating in this sector. Size was defined by the size of the annual turnover for 2020, as the data on the size of assets or the number of employees could, as already mentioned, be skewed.

The optimal company size depends on if it reaches a return scale point. A company with insufficient turnover is unable to reach this return scale point and often faces a loss. Conversely, a company with too much turnover shows diminishing returns to scale. With an optimal annual turnover (size), the company achieves efficiency and is competitive.

The results of the calculations show that efficiency in road freight transport expressed by the IN05 index was achieved by companies with an annual turnover of €194 - €388 thousand.

The aim of this paper was to confirm the dependence of efficiency on the size in road freight transport companies and thus to prove the validity of the law of increasing and diminishing returns to scale in this sector as well. The practical contribution is information about what size, i.e., the extent of turnover of a company, is the most appropriate to be competitive in this sector, both for start-ups and for companies facing financial problems which could be caused by an inappropriately chosen size of company to be competitive.
Choosing the size of the business is part of this strategic planning and contributes to efficiency and competitiveness. Further research could determine the optimal size of enterprises in other sectors of the industry that face great competition.

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OPTYMALNE OBROTY FIRM ŚWIADCZĄCYCH USŁUGI TRANSPORTU DROGOWEGO TOWARÓW JAKO NARZĘDZIE EFEKTYWNOŚCI I PRZEWAGI KONKURENCYJNEJ

Streszczenie: Sektor transportu odgrywa istotną rolę w zapewnieniu konkurencyjności i zrównoważonego wzrostu gospodarczego w Europie. Istnieje szereg opracowań dotyczących konkurencyjności w transporcie. Większość z nich opiera się na kompletnym gałęzi transportu. Metody te łączą aspekty jakościowe i ilościowe. Rezultatem są kryteria jakościowe, które optymalizują parametry konsumenckie i ekonomiczne w celu zwiększenia konkurencyjności firmy. W niniejszym artykule zbadano związek między obrotem a efektywnością wynikającą konkurencyjności, skupiając się na czeskich firmach w drogowym transporcie towarów. Wiele firm boryka się z problemami finansowymi. Celem artykułu jest ustalenie czy obroty wpływają na efektywność przedsiębiorstw oraz jaki poziom obrotów związanych z konkurencyjnością pozwala osiągnąć maksymalną efektywność. Skuteczność mierzona jest syntetycznym wskaźnikiem IN05. Zależność między obrotami

a efektywnością jest testowana za pomocą testu niezależności chi-kwadrat, a test Kruskala-Wallisa mierzy wszelkie różnice między grupami przedsiębiorstw o różnych w obrotach. Wiedza ta powinna pomóc w ustaleniu optymalnych obrotów dla przedsiębiorstw zapewniających osiągnięcie przewagi konkurencyjnej. Badania próby 2536 firm potwierdziły, że obroty firmy wpływają na jej wyniki finansowe. Wyniki obliczeń pokazują, że najlepszą efektywność osiągnęły firmy o rocznym obrocie w przedziale 194 – 388 tys. euro.

Słowa kluczowe: konkurencyjność, efektywność, transport, optymalne obroty firmy, wskaźnik IN05, transport drogowy towarów

公路货运公司的最佳周转率作为提高效率和竞争优势的工具

摘要：运输部门在确保欧洲的竞争力和可持续经济增长方面发挥着重要作用。有许多研究涉及运输业的竞争力。他们中的大多数是基于运输的总集。这些方法结合了定性和定量方面。其结果是优化消费者和经济参数以提高公司竞争力的质量标准。本文通过关注捷克公路货运公司，研究了与竞争力相关的营业额和效率之间的关系。许多公司面临财务问题。本文的目的是确定离职率是否会影响公司的效率，以及与竞争力相关的离职率水平达到最大效率。效率由综合指标 IN05 衡量。营业额与效率之间的关系通过独立卡方检验进行检验，Kruskal-Wallis 检验衡量企业营业额中不同组别之间的差异。这些知识应该有助于为企业设定最佳营业额以获得竞争优势。对 2,536 家公司样本的研究证实，公司的营业额会影响其财务业绩。计算结果表明，年营业额为 194 至 38.8 万欧元的公司实现了最佳效率

关键词：竞争力，效率，运输，最优公司营业额，IN05 指数，公路货运