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The comparison of trade enterprises

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Abstract

The research paper is devoted to the development of trade enterprises. It is aiming to propose framework helpful to compare trade enterprises by geographic location. Such findings of this research paper could be useful for policy makers. The analysis of scientific literature published by Oxford University Press, Cambridge University Press, Harvard University Press, Springer, M. E. Sharpe, Routledge, etc. show that only 0.44% of authors analyze the performance of trade enterprises and trade sector's development. First, in the paper the results of investigations towards methods used for enterprises' performance analysis are overviewed. Second, the framework used to compare trade enterprises by geographic location is presented. Different performance factors are suggested for the benchmarking. At the end of the study, the application of proposed framework is given. The results of the paper can be useful for private enterprises and policy makers.

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1. Trade enterprises

Trade is an activity for selling goods and services. The word “trade” means to buy, sell or make exchange in goods. Trade is the branch of economy, dealing with goods which are transfer from the sphere of production to consumption. Trade is the type of activity covering (based on the NACE 2 classifier):

- Wholesale trade. The core activities of wholesale trade consist in the resale of goods to professional consumers and enterprises. Prior to selling, goods, without changing the essential form of goods, may be sorted out, packed, mixed or repacked.

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- Retail trade. In a number of cases retail trade is conducted in stores; however there are also such trading forms as the sale of goods over the internet, warehouse's sale, etc.
- Wholesale and retail trade of vehicles.

Trading enterprises have significant impact on the national economy. Among European Union's enterprises 31.8% of the companies are with trading activities. In European Union trade companies employ more than 30 bln. employees from 280.8 bln. and their sales are significant: in EU their sales takes 66%, in Lithuania 74% of gross domestic product value.

Among European Union's trade enterprises small and medium size enterprises take the largest part (their share is 99.87%; therefore 80% of value added is created by these enterprises). Talking about different industries, it should be mentioned that the share of large enterprises in trade sector is the lowest; but the number of enterprises, persons employed and value added is the highest. Therefore, they also stand among sectors, which have the lowest labor productivity.

In general, service enterprises are the largest and fastest-growing enterprises of the economies of the world. It encompasses a wide range of areas including wholesaling and retailing services as well (Sahay, 2005).

The study presented herein contains three different aspects. First, the results of investigations towards methods used for enterprises' performance analysis are overviewed. Second, a theoretical framework that incorporates performance factors used for benchmarking is presented. Third, the application of framework for trade enterprises, located in European countries, is given.

1.1. Literature analysis

Continuous innovation and development are becoming the prerequisites of the enterprise's sustainable operations (Zekic & Samarzija, 2012). Authors put a lot effort analyzing the enterprise's performance (Warusawitharana, 2012; Hennart, 2007; Ittnera, 2003; Brouthers, 2002). There is no doubt on the existence of performance evaluation systems in all trade enterprises. This necessity is so evident that the lack of performance evaluation system is treated as the symptom of trade enterprise's unhealthiness. Market estimation companies present the performance by showing current market position of enterprise in relation to other enterprises. This is called as market share analysis. Such evaluations are useful and healthful for improving weaknesses which is done through the recognition of strengths of performed activities. Other well-known system used for performance evaluation is financial evaluations. This approach is the oldest and the most important approach used for evaluating the performance of enterprises based on financial statements. Four main instruments are used for performing such analyses, such as horizontal, vertical, procedural, and ratio analyses. Corporate performance's analysis provides an insight to managers about future directions. Such analyses are useful in recognizing the past and present conditions and provide some guidelines for future strategies (Tehrani, Mehragan, & Golkani, 2012).

In scientific literature also other techniques used for performance analysis are mentioned such as:

- Data Envelopment analysis (DEA). This approach evaluates each contribution of input to productive process based on historical data;
- Multi-criteria analysis. Since 2000 it has become more widely recognized. If where are quantities, which can be valued in monetary terms, multi-criteria analysis is used not as a substitute for cost-benefit analysis, but as complement. Multi-criteria analysis is used for diverse of problems that are addressed.

Kumar & Basu (2008) mention that there are numerous literatures on the application of DEA in both manufacturing as well as service sectors. Sueyosh (2000) presents study "A process for evaluating retail store efficiency: a restricted DEA approach" where pointed out the disadvantages of past performance. Emphasizing that making plans for the future is more important than looking at past performance; this study has presented a random DEA model, which incorporates future information. That's why it was called "DEA future analysis".

MCA techniques are used for the analysis of the sustainable development because the number of the criteria to be considered is usually large. In this case, multi-criteria analysis allowing the set of criteria to be expressed by a single generalizing criterion (Ginevicius & Podvezko, 2007). Usually it incorporates quantitative and qualitative variables.

1.2. Factors used for comparison

There are two groups of factors that are presented in the literature:

- General factors, which are characterizing national environment (legislation, telecommunications infrastructure, government policy, transparent and trust financial system). The analysis of such indicators is not a part of this study.
- Specific factors, which show trade sector specifics (labor productivity, personnel costs, investments, gross operating surplus compared with turnover, etc.). Usually variable that represent financial statements are always included as specific factors used in performance analysis.

Labor productivity. Productivity is performance measure that contains everything what makes enterprise function better. Seeking to improve the economic performance one has to know which factors influence the performance of enterprise (Donselaar, Kokke, & Alessie, 1998). For this benchmarking method can be used. In general, productivity is important to economic performance of any enterprise. The analysis of the theories devoted to the theme of productivity show that the productivity of distribution sector should be understood as phenomena. There are these main reasons for why productivity is crucial for distribution sector. First, the enterprise of distribution sector is provider of business services (it affect costs of inputs). Second, the distribution sector is a consumer of social services (it uses labor resources). Changes in distribution sector productivity may significantly affect economy. Usually, service organizations don't measure productivity as production enterprises due to complexity of inputs and outputs. On the other hand it is necessary to identify characteristics of services, which are critical for productivity increase (Sahay, 2005). All this proves that labor productivity should be included into the framework, used for the comparison of trade enterprises (see table 1). Enterprises' characteristics were measured by labor productivity ratio (turnover divided from the number of workers). This increases the possibility of enterprise to allocate more resources to foreign markets. Such international experience gives for enterprises important knowledge about customers, markets, cultures, and governments, which encourages future expansion (Mohamad & Hoshino, 2012).

There are several studies on productivity in distribution sectors. Mellat & Elham (2010) provided study, in which dependence between labor productivity and profitability is analysed. Battisti & Iona (2009) researched the productivity gaps between UK service sectors and its main international competitors. They mentioned that there is the productivity gap between distribution sectors of UK and US. Seller-Rubio et al. (2007) presented research, in which contribution to measurement issues related to service and retail productivity is provided. In this study the productivity change is separated into efficiency change and technical change. Johnston & Jones (2004) mention that productivity derives from the actions of service enterprises. In addition, in their study the relationship between productivity and customer is analysed. Tietz (1971) analyses both wholesale and retail distribution sectors. His study includes socio-economic factors leading to sectoral economic growth. Sobotka & Platts (2010) provide two-level analysis about the performance of service organisation: the analyse of organisational performance and the analyse of workers performance. According to Oprime, Tristao, & Pimenta (2011) enterprises have to improve their performance seeking to achieve integration in productive supply chains. Based on this Yusof (2008) provides the framework, which includes long-term and short-term behaviors of variables.

Average turnover per enterprise. The size of the enterprise indicates that economies of scale are important. There is a correlation between average turnover per enterprise and labor productivity. Exporters used to have higher output allowing them to cover entry into foreign market costs. Kox & Rojas-Romagosa (2010) are thinking that exporter premium is more important for small enterprises than for large ones, because the costs needed to enter to foreign market are relatively higher for smaller enterprises. When scale of operations increases exporters get returns from costly productivity- related investments, since trade entails a larger access to product markets. The demand to company's product increases the capacity of enterprise's operations. In addition this suggests that exporters have to adapt more innovative technologies.

In general, exporting enterprises have also statistical and positive performance premium. The contribution of single country to export varies, e.g. countries and trade enterprises with the intermediate diffusion of old innovations export the less.

Table 1. Definitions of performance indicators

| Performance indicator | Formula |
|---|--|
| Labor productivity | = Turnover / Number of persons employed |
| Average personnel costs per head | = Personnel costs / Number of persons employed |
| Value added per worker | = Value added / Number of persons employed |
| <i>Structure ratio</i> | |
| Average turnover per enterprise | = Turnover / Number of enterprises |
| <i>Financial variables</i> | |
| Gross operating rate | = (Gross operating surplus / Turnover)*100 |
| Investments rate | = (Investments / Turnover)*100 |
| Investments to tangible goods rate | = (Investments to tangible goods / Turnover)*100 |
| <i>Other variables</i> | |
| Number of collaborating enterprises, % | = (Number of enterprises collaborating with other enterprises from supply chain / Total number of trade enterprises)*100 |
| Number of enterprises applying innovations, % | = (Number of enterprises applying different type of innovations / Total number of trade enterprises)*100 |

The reduction in international trade costs can have a substantial impact on individual enterprise's decisions to exit, export, and invest in research and development activities seeking to improve the costs or quality of existing products and create new ones. Due to this indicator presenting the number of trade enterprises per country, which apply innovations, are involved into developed framework.

2. The comparisons of trade enterprises

2.1. Framework used for the comparison of trade enterprises

For the comparison of trade enterprises, multiple criteria method and the set of criteria is used. In quantitative comparison of each alternative nine criteria are selected. Some of these criteria have different direction (Turskis, Zavadskas, & Peldschus, 2009). Maximising and minimising criteria are with different directions. Below (see Table 2), the criteria and their direction – maximizing or minimizing (i.e. max or min in column 2), is defined.

For long time managers are dealing with multiple criteria issues (Zavadskas & Turskis, 2011; Antucheviciene, Zavadskas, & Zakarevicius, 2010). Numerous methods have been developed for the analysis of such problems (Peldschus, 2009). One multiple criteria method is the method of COmplex PROportional Assessment of alternatives (COPRAS). COPRAS assumes the direct and proportional dependence of significance and utility degree of the investigated versions on the system of criteria. During the application of method direct and proportional dependences are assumed and the alternatives, values and weights of criteria are adequately described (Turskis, Zavadskas & Peldschus, 2009). Among Lithuania scientists COPRAS method is used widely (for example, by Kildiene, Kaklauskas, & Zavadskas, 2011; Ginevicius & Podvezko, 2009; Ginevicius & Podvezko, 2008; Andruskevicius, 2005; Malinauskas & Kalibatas, 2005). Based on such type of methods, the multiple criteria problem is represented by a matrix.

In order to avoid the difficulties caused by different dimensions of nine criteria, normalization is used (Ginevicius, 2008). The criteria weights (see Table 2) are determined by the experienced experts from trade companies and home University. The number of experts is limited to ten. Calculations are more accurate and more objective when the number of experts is higher.

Table 2. Formulated matrix

| Criterion | | | Performance indicators in different countries | | | | | Sum |
|----------------|-----------|----------------|---|-----------------|-----------------|-----|-----------------|-----------------------------|
| Name | Direction | Weight | 1 | 2 | 3 | ... | u | |
| X ₁ | Max | r ₁ | d ₁₁ | d ₁₂ | d ₁₃ | ... | d _{1u} | $S_1 = \sum_{j=1}^n d_{1j}$ |
| X ₂ | Max | r ₂ | d ₂₁ | d ₂₂ | d ₂₃ | ... | d _{2u} | $S_2 = \sum_{j=1}^n d_{2j}$ |
| X ₃ | Max | r ₃ | d ₃₁ | d ₃₂ | d ₃₃ | ... | d _{3u} | $S_3 = \sum_{j=1}^n d_{3j}$ |
| X ₄ | Min | r ₄ | d ₄₁ | d ₄₂ | d ₄₃ | ... | d _{4u} | $S_4 = \sum_{j=1}^n d_{4j}$ |
| ... | ... | ... | ... | ... | ... | ... | ... | ... |
| X _n | Min | r _n | d _{n1} | d _{n2} | d _{n3} | ... | d _{nu} | $S_n = \sum_{j=1}^n d_{nj}$ |

The application of multiple criteria methods depends on the calculation of criteria weights. Usually experts are used for the estimation of weights. The consistency of experts' judgments is checked using the coefficient of concordance. The sum of scores (see formula 1), presented by experts:

$$c = \sum_{j=1}^r c_{ij} \cdot (i = 1, \dots, m) = 450 \tag{1}$$

here *m* is the number of alternatives; *r* – the number of experts.

The coefficient of concordance *W* is calculated according such formula (2):

$$W = \frac{S}{S_{max}}, \text{ when } S = \sum_{i=1}^m (c_i - \bar{c})^2 \tag{2}$$

here *S* is the sum of deviations, which shows difference from average squared, *S_{max}* – the sum of deviations in ideally agreed case, *c* – overall average is calculated according formula (3):

$$\bar{c} = \frac{1}{2} r(m + 1) = \frac{1}{2} \cdot 10(9 + 1) = 50 \tag{3}$$

When the sum of deviations *S* is equal to 2840. The sum of deviations in ideally agreed case is according formula (4):

$$S_{max} = \frac{r^2 m(m^2 - 1)}{12} = \frac{100 \cdot 9 \cdot (81 - 1)}{12} = 6000 \tag{4}$$

When the coefficient of concordance *W* is equal to 0.47. The significance *x*² for the coefficient of concordance is calculated as follows (see formula 5):

$$x^2 = Wr(m - 1) = 0.47 \cdot 10 \cdot (9 - 1) = 37.86. \tag{5}$$

Random number x^2 is distributed under x^2 with $v = m - 1$ the degrees of freedom of the chosen significance level α (in practice α is usually equal to the value of 0.05 or 0.01).

The coefficient of concordance is equal to 0.47 (its significance is equal to 37.86 and is greater than the critical value – equal to 14.79) and shows that experts' judgments are in a good agreement. This means that the weights of criteria (estimated by experts) can be used for analysis (Podvezko, 2005).

Before normalization, the weights of criteria (or significance of each criterion i) have to be placed into the model. After this the matrix is normalized according formula (6). The sum of normalized values r_i is equal as always to one.

$$b_{ij} = \frac{d_{ij} \cdot r_i}{\sum_{j=1}^n d_{ij}}, i = \overline{1, 9}; j = \overline{1, u} \quad (6)$$

here b_{ij} – criteria value at j specific country trade enterprises, u – number of countries, involved into research, i – significance of criteria.

In any case, the sum S_{+j} is always equal to the maximizing S_+ criteria weight amounts (see formula 7):

$$S_{+j} = \sum_{i=1}^5 b_{+ij} \quad (7)$$

Also the sum S_{-j} is always equal to the minimizes S_- criteria weight amounts of the alternative (see formula 8):

$$S_{-j} = \sum_{i=1}^5 b_{-ij}; i = \overline{1, 9}; j = \overline{1, u} \quad (8)$$

Compared the relative importance of each alternative is determined on the basis of describing them and taking into account the lowest with minimizing value. Each relative importance is determined by formula (9):

$$Q_j = S_{+j} + \frac{S_{-\min} \cdot \sum_{j=1}^n S_{-j}}{S_{-j} \cdot \sum_{j=1}^n \frac{S_{-\min}}{S_{-j}}}, j = \overline{1, u} \quad (9)$$

In the final stage priority sequence is set. The greater the number Q_j , the higher priority is. The developed framework is applied for the comparison of trade enterprises (located in the specified European Union country) in proper priority sequence.

2.2. Reliability of data

For the comparisons of trade enterprises data retrieved from Eurostat (2010), which is collected using questionnaire, is used. The data for trade sector is collected in close collaboration between Eurostat and national statistical institutes.

The sample size is determined by statistical analysis. The results of the analysis of survey sample show that it is sufficient.

In order to ensure 99% reliability of statistical data and 1% of allowable inaccuracy 0.92% trade enterprises have to be questioned. During Eurostat survey 1.20% of trade enterprises have been interviewed.

For aggregation purposes (the euro area and EU27 aggregates), missing data concerning specific countries, and sectors are estimated by Eurostat, but are not separated.

2.3. The results of the study

The results of the comparison of trade enterprises show that Danish and Luxembourg trade enterprises have received the highest scores and Bulgarian and Romanian trade enterprises received the lowest scores comparing with trade enterprises located in other European countries.

Among European trade enterprises the labor productivity and value added per person employed are the highest, average personnel costs per head, average turnover per enterprise are the highest, investments into tangible goods rate is the lowest in Luxembourg trade enterprises. The results of the study show that there is big gap between Luxembourg and Bulgarian trade enterprises. Labor productivity is 20 times lower, value added per person employed is 13 times lower, turnover per enterprise is 34 times lower, and average personnel costs per head are 13 times lower as well.

The conducted empirical study has shown that the offered framework can be applied seeking to identify countries, where trade enterprises have the strongest performance.

Findings of this research paper could be useful for private enterprises and policy makers.

3. Suggestions for future researches

Future researches may include more on the following directions:

- One direction is to rank and evaluate a set of trade companies active in different markets by the model proposed in this study;
- Another direction – expansion of suggested framework. In addition to criteria used here in the framework, future researchers could examine other qualitative and quantitative criteria to further develop the proposed model. Such analysis of qualitative criteria could be included in future studies: age of enterprise, ROE, ROC, ROA, inventory turnover ratio, asset turnover ratio, debt ratio, etc.

4. Conclusions

For corporate performance's analysis different variables are included. First, financial statements, as oldest and most important variables, are included into proposed framework. Second, other long-term behavior variables representing productivity and economies of scale are involved as well. The theoretical analysis shows that the selection of productivity measurement according the measurement theory is crucial issue for service organizations. The measure has to represent the economic dimension of service operations. Also the size of the enterprise indicates that economies of scale are important seeking to enter to foreign markets. This means that such variables should be added into proposed framework.

Third, mid-term behavior variables representing application of innovations and collaboration with other enterprises from supply chain are also included. The analysis of literature show that the contribution of single country to trade varies, e.g. countries, which have higher diffusion of new innovations, export more and countries, which have higher diffusion of old innovations, export less. According to authors enterprises, seeking to achieve integration in productive supply chains, have to improve their performance

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The conducted empirical study has shown that the offered framework can be applied seeking to identify countries, where trade enterprises have the strongest performance. At the end suggestions for further researches are formulated.

Findings of this research paper could be useful for private enterprises and policy makers. Looking from the perspective the better understanding of trade features is important in formulating public policy towards trade and the application of new innovations.

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