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**INVESTIGATING THE INFLUENCE OF
OPERATIONAL SUCCESS FACTORS AND
STRATEGY CHOICE ON THE
EFFECTIVENESS OF LOGISTICS SERVICE
PROVIDER COMPANIES**

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1. CONTEXT OF RESEARCH, RESEARCH OBJECTIVES

The re-establishment and growth of production and services coupled to them may be one of the way out of the crisis of 2008. The manufacturing and service companies ‘are not only delivering but also spurring growth’ (Chikán, 2013). Moreover, in the after crisis market economy, the development of logistics will be the main force behind international trade development (WEF, 2013). Increasing logistics’ contribution to GDP is a key priority of Hungary’s economic policies (MTI, 2013). This room for development is highlighted by the fact that the share of logistics in the national economy is 6%, whereas logistics accounts for 10-12% of the GDP in the developed countries (IFKA: Logistics Sector Policy Strategy, 2013). The importance and significant role of logistics is underlined by Government Decision No. 1157/2013 as well, which brought about the Mid Term Logistics Strategy (MTLS) with the active involvement of the industry and the social partners. According to logistics experts, implementing MTLS will have a crucial impact on the economy of Hungary in the next programming period of the European Union (2014-2020).

Referring to the thoughts introduced above and the consequences of the relevant intentions, examining the field of logistics – as a service capable of value creation and influencing competitiveness significantly – and within that, understanding and analysing the activities of logistics providers (3PLPs) has become more pending than ever before. To reach the above stated goals and to enable the improvement of the target companies, it is an important, even inevitable task to pinpoint the operational success factors contributing to the basic capabilities enabling the competitiveness of Hungarian logistics companies (Fig. 1).

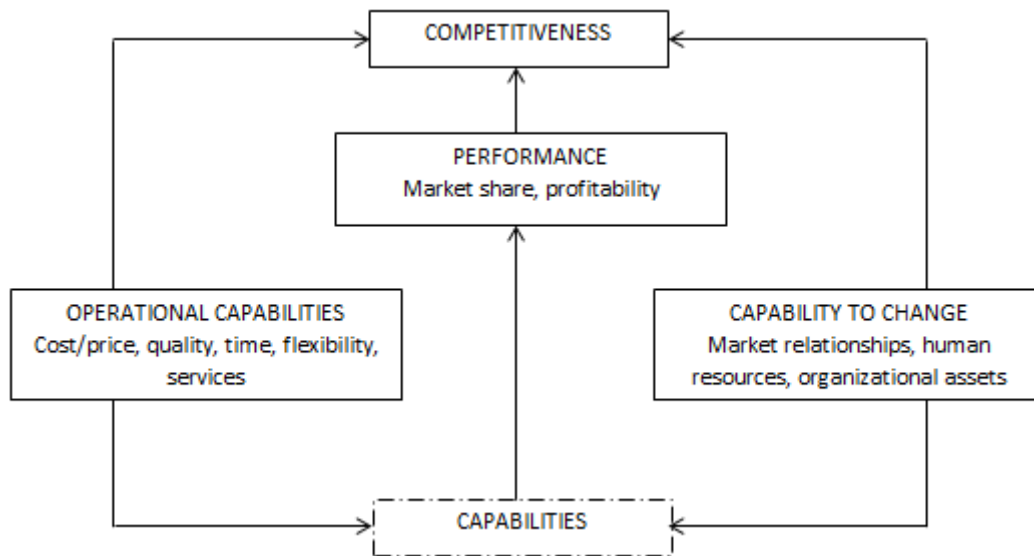


Fig. 1. Model of company competitiveness

Source: Chikán (2013): What makes a company competitive?, Competitive Company = Competitive Economy Conference, 25th September 2013, Budapest

Research into the subject and activities of 3PLPs is scarce (Selviaridis-Spring, 2007), not many of them are available worldwide. It is mostly American and English research results that can be found (Murphy-Daley, 2001), (Markides-Holweg, 2006). Reviewing the scientific literature we can dominantly find American and English scientific literature from the 1990s onward. Then, after 2000, researchers from Northern European countries (e.g. Sweden, Norway) did also publish scientific results concerning this field (eg. Hertz – Alfredsson, 2003; Huemer, 2011). In Hungary it was in 2005 that Bokor’s article with the title ‘Evaluating the state of the art and exploring the development possibilities of intermodal logistics services’ was published. The part of this paper concerning 3PLPs deals mainly with reviewing the relevant scientific literature, proposing definitions and giving their explanation (Bokor, 2005). The appendix of the annual report prepared by the Association of Hungarian Forwarding and Logistic Service Providers provides yearly some brief, concise information about the survey carried out among the member companies. Unfortunately, the response rate is 50% (the results are based on the responses of 30-35 logistics providers), and, for members, performance and operational data give only some very basic and general information. The research of Bank *et al.* carried out in 2010 was a breakthrough, yielding an in-depth and comprehensive report of the economic situation of the players in the Hungarian forwarding, shipping and logistics market and the expected movements in the sector (Bank, 2010).

Finally, nowadays, logistics service providers are frequently under the scrutiny of Hungarian scientific articles (Horváth, 2012; Hegyi-Horváth, 2012).

The empirical research within the framework of the doctoral dissertation deals with the comprehensive examination of Hungarian logistics service providers' operational success factors. In the course of this, it builds among others on the scientific literature enumerated above, but it also takes a new approach while investigating the situation of Hungarian 3PLPs.

The social, economic, and political effects, changes and tendencies currently palpable in the Hungarian and international environment have been explored so as to provide a strong basis for Hungarian research. My own experiences, the experiences from meetings with managers of Hungarian logistics providers, just as well as the results of interviews with scientific researchers could be used to create the success factor clusters (Fig. 2). Based on these and starting from here, looking for the relationship between abilities and 'success factors', clustering the factors provided the foundations of research, i.e.:

- *S1*: trust – effectiveness – flexibility (trust examined as a basic factor of inner-company and inter-company relationships, striving to reveal the role of the top manager in creating trust),
- *S2*: time – service portfolio – flexibility (time based competition of products and services as a competition of supply chains, the composition and profitability of the service portfolio),
- *S3*: finding the right company size – acquisition – strategies (a way to find the economies of scale of the logistics provider segment to be examined, the role of strategy choice),
- *S4*: the level of logistics provider integration into the supply chain – the effect of (special) IT technologies and developments – and their relationship to flexibility, just as well as their influence on the financial results of the company.

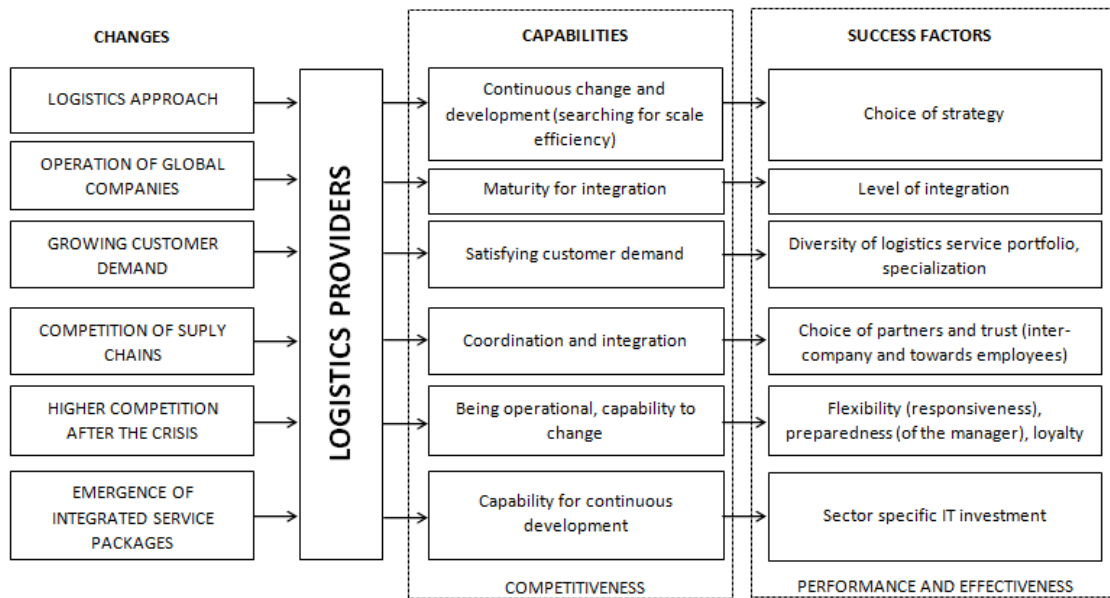


Fig. 2. Forces influencing logistics providers and abilities needed for their competitiveness recently (with a view on success factors contributing to performance and effectiveness)

Source: own research, 2013

By the means and clustering of the influences, changes, trends and experiences revealed, the objectives of the research could be determined i.e.:

- *C1*: Examine and analyse the role of trust and the effects of its extent on the revenue, earnings before taxes and flexibility of the logistics service providers. Within this, examine the role of the top manager in the inner-company and inter-company business relationships (trust levels), and connected to that, how the top manager contributes to the revenue, earnings before taxes and flexibility of the logistics providers.
- *C2*: Examine and analyse the profitability based diversity of the Hungarian logistics providers' service portfolio, and how that influences the revenue, earnings before taxes and flexibility of the logistics providers.
- *C3*: Examine and analyse how acquisition activities carried out while searching for the right company size influence the revenue, earnings before taxes and future strategies of logistics companies.

- *C4*: Examine and analyse the role and significance of industry specific IT development from the point of view of the revenue, earnings before taxes, and how they influence the companies' flexibility and integration.

2. SAMPLE AND METHODOLOGY

2.1. Data collection

Before starting the doctoral research, the list of target companies was compiled as based on sources provided to me by industry organizations and on databases available from the relevant official sources. (In the course of this compilation, I was excessively aware of the danger of duplication and took measures to prevent it.) The resulting database included 300 Hungarian logistics providers. Out of these, the companies with revenues (net sales) above 100 thousand EUR, but at or below 100 million EUR were selected and included in the target group of the research. This group consisted of 284 logistics providers. Beyond the companies' names, this list also contained the name and email address of the target person (CEO, director general etc.). In order to elicit those responses from the target group, which are able to back up or reject the research hypotheses, I have developed a questionnaire comprising of 56 questions. Due to my personal market involvement, I have requested the GfK Hungary Market Research Group to post the survey using the CAWI method (see Chapter 2.2). During a prior telephone call or a personal talk with the managers of the target companies, I assured them that the questionnaires will be identified as based on the IP addresses, thus I will not be able to correlate the responses with the respondents.

Building on the lessons learnt by talking with company managers, I also had to alter the questions regarding trust level definition. The managers of Hungarian logistics providers informed me that, for reasons of confidentiality, they would not reply to questions necessary to determine trust levels (level of balance, willingness to take risks). Thus, contrary to my viewpoint and intentions, it was not possible to assess trust with a 'hard', 'risk based' approach due to the palpable low rates of the willingness to respond. So, I had to alter the questionnaire, accepting the 'faith based' approach, and asking 'soft' questions which support that. As I wanted to receive honest and real responses from the 'competitors', the opinions formulated during these conversations also reinforced my belief that asking a market research company was inevitable so as to be able to receive valuable and representative replies (the companies in the target group would not have provided me with the responses directly). The finalized questionnaire was transformed into a questioning programme, a so called script.

The cover letter written by me was then sent to the address of 284 Hungarian logistics companies on 25th April 2013 containing a short description of the research objectives and the internet link to the questionnaire. In order to increase the response rate, a reminder email was sent every 4 days to those who have not started or have aborted filling in the questionnaire. In spite of all these efforts, in the first 3 weeks of the data collection (until 10th May 2013), only 28 respondents filled in the questionnaire (a response rate of approx. 10%). So, I decided to let the relevant companies be phoned too (parallel to being emailed to as well, from 15th May 2013), to thus increase the response rate. I monitored the incoming questionnaires for two weeks after these phone calls were made (until 27th May 2013). Due to the moderate success and the telephone feedbacks (stating that the respondents would have been much more willing to fill in the questionnaire with the help of telephone operators), I continued data collection in a hybrid way from 28th May 2013 onwards, meaning that the respondents could still fill in the questionnaire online, or they could reply to the questions on the phone, getting the help of an operator. This solution proved to be a relative success. Until 5th June 2013, the number of filled in questionnaires doubled to the number of 56, yielding a response rate of approx. 20%. Data collection was terminated at this stage, because the feedbacks received while calling the addressees of the list several times enabled us to conclude that a significant number of (new) responses could not be expected in the upcoming period, among others also because of the upcoming summer vacations.

2.2. Methodology of data collection

Having analysed the resource exigency of the different alternatives (need for an interviewer, time factor etc.) and taking into account the characteristics of the research topics and of the target group, the so called CAWI (computer-assisted web interviewing) method was selected. In case of the CAWI method, the finalized questionnaire is transferred into a questioning programme (a so called script). This programme is uploaded to a server, and from here a link can be sent to the email address of the targeted respondents. Clicking on this link launches the programme, and the questionnaire can be filled in. In CAWI, it is possible to generate so called individual links and to make registration obligatory, but responding via the general link is also possible. In my doctoral research, I applied individual links, because this is relatively easy to generate, it does not require an extra effort from the respondents and enables the continued, reliable monitoring of data collection, while it also enables the respondents to suspend and then, later on, continue filling in the questionnaire.

The questionnaire consisted of 56 questions (including questions about the demography of the respondents and their firms, and about later publication of the research and also providing crosschecking). Taking into account the nature of the questions, it took approximately 15-20 minutes to fill in the questionnaire for a given company. For the empirical analysis of the financial data, I utilized the HBI database. To enable later data coupling, the GfK Hungary Market Research Institute provided me with the numbered list of the companies who had filled in the questionnaire (but, naturally, without the responses). I have imported the financial data, necessary for the examination of the research hypotheses, of the 2004-2011 period (where available, even of 2012) into an Excel table. I also recorded the revenue and earnings before taxes of the 56 respondent firms in the given period. I could well utilize this table during data processing and for the purposes of the software employed (SPSS). Where the financial data for 2012 were not available, there I validated the % tendency (category) value asked in the questionnaire, relevant to the last closed fiscal year (2012) of the respondent company. The total revenue of the respondent Hungarian logistics service provider companies in year 2011 (the year when all relevant statistics were available) was 127,657.51 million HUF. This value is more than 50% of the total yearly revenue (2011) achieved by the Hungarian logistics companies featuring in the IFKA study (2013). The representativeness of the doctoral research can be proven if the 20% response rate and the higher than 50% revenue level is taken into account. In order to prove the representativeness of the data (Koltai, 2007, p. 30), as based on the data available, I displayed the geographical distribution of the basic sample of the logistics service providers and the subset of those, who responded. The two geographical distributions, divided on county level, show well how the distributions ‘match’, and prove representativeness. Representativeness is also underlined by the test results of the basic sample and the subset, just as well as the similarity of the histograms illustrating the distributions. From the results of the tests we can determine that none of the two distributions is normal (*sig.* = 0,000, in both cases), and that the two distributions are very similar, when looking at their parameters. As a conclusion it can also be stated, that the distribution of neither the basic sample, nor the subset can be seen as normal (their parameters are different), but the kurtosis of both of them is similar, skewed to the left, extended to the right. As based on this information, it can be stated that both the samples and their functions are similar (although different from normal). Similarity is further emphasized by the F-test, as using this, the variance of the two samples can be regarded as identical ($F = 2,213$; $p = 0,138$).

2.3. Peculiarities and difficulties experienced during data collection

The needed extension of the data collection period and the fact that the originally applied data collection method had to be altered during the data collection procedure, shows clearly that the conducted doctoral research cannot be regarded as a usual, routine survey from several aspects. Among others, it was revealed in the course of the phone survey that the companies frequently could not even be reached via the official telephone numbers published at the firms' website. However, this happened more often in the case of the smaller companies. The interviewers had the first direct contact with the target persons during the phone follow up, in the course of the 'hybrid' method, and this is also where they encountered the first real rejections. The rejections originated both from smaller and larger companies, in a mixed way. The main reason for rejection was the lack of time and other resources, just as well as the lack of interest. Nevertheless, concerning the aborted questionnaires, the phone follow up and the possibility for 'hybrid' data input increased the response rate significantly. The respondents' lack of interest in a comprehensive analysis and research regarding their industry is well emphasized by the fact that their attention was not attracted by the 'gift' offered (the research results briefly summarized and to be posted subsequently). This also highlights a general problem that might be assumed. It may lead us to believe that the promises integrated into prior researches might not have been fulfilled. The other reason behind the low number of responses and the slow data collection might be distrust.

2.4. Short introduction to the SPSS software, methodology

The SPSS mathematical-statistics software package extends to the most modern statistics processes, ranging from database management through descriptive statistics to the most complex multivariate statistical procedures. The two sample t-test compares the means of the variables in two independent samples. The null hypothesis of the test is that the means of the two populations are equal. The prerequisite of this test is normal distribution (and as it is robust to moderate violations to the normality assumption, it can be carried out if the distribution does not deviate significantly from the normal) and the equality of the variances (this can be checked with Levene's test).

Levene's test is an inferential statistic used to analyse the homogeneity of the deviations, where the investigated phenomenon is measured by category variables. It assumes that the variance of the populations examined are equal.

Analysis of variance (ANOVA) is a statistical method capable of comparing the averages of several populations having equal deviation and normal distribution. It compares the different mean values of the population with the help of variances originating from different partitions of the sample. It analyses the total deviation, or more concretely, the total variance of the whole population created as a basic sample from all the data in a given examination. It searches for the reason behind fluctuations, while it helps clarify whether the differences in the deviations mentioned above are only random, or if there is another explanatory variable to which these are attributable. Such an explanatory factor might be the difference between the averages of the groups within the given population. The variances are calculated and estimated as based on the mathematical principle that the numerator of the total variance, i.e. the total deviation's sum of squares can be created as the sum of independent elements, whereas the divisor, that is the degrees of freedom is the sum of the different components' degrees of freedom. The part of variance explained by the fact of belonging to a given group is shown by eta-square. This can have a value between 0 and 1 and it can also be expressed in percentages. The F-test is the test for the analysis of variance (ANOVA).

Cramer's V. This test measures the association between two nominal variables, the null hypothesis being that the two variables are independent. Utilizing the methods explained above, I examined 10 hypotheses.

3. RESULTS

3.1. Results of the literature review

To achieve the research objectives and to be able to formulate the hypotheses, more than 300 Hungarian and international publications relevant to the field were reviewed. During this literature review, the focus of research was further narrowed down, thus the discerned operational success factors have been concretized as follows:

1. Trust in the employees (inner trust)
2. Trust within the company
3. Management approach and stakeholders' trust created by the top managers
4. Composition, diversity and profitability of the service portfolio
5. Growth strategy
6. Development by acquisition
7. Sector specific IT development

3.1.1. Formulating hypotheses

By determining the hypotheses, key success factors improving operations are to be taken into account as a first priority, and subsequently, the way they affect and relate to the competitiveness of Hungarian logistics providers needs to be examined (also viewing separately their performance, their operational capabilities, just as well as their capability to change). Having reviewed the scientific literature, the following hypotheses were formulated:

HP1: The inner-company trust of the Hungarian logistics providers has an influence on the revenue and on the earnings before taxes of the companies

HP2: The inner-company trust created by the Hungarian logistics service providers has an influence on the flexibility of the logistics providers examined

HP3: The level of trust in business relationships created by the top manager of the Hungarian service providers has an influence on the revenue and on the earnings before taxes, and also on the flexibility of the logistics companies examined

HP 4.1: The earnings before taxes of the Hungarian logistics providers is determined by the profitability based diversity of their service portfolio

HP4.2: The profitability based diversity of the service portfolio of the Hungarian service providers has an influence on the flexibility of the companies

HP5.1: Growth by acquisition (search for economies of scale) supports the increase in revenues and earnings before taxes of Hungarian logistics service providers more than organic growth

HP5.2: The mid-term, growth-oriented strategy contributes more to the increase in earnings before taxes of Hungarian logistics service providers than other strategies

HP6.1: The revenues and the earnings before taxes of Hungarian logistics service providers depends on the sector specific IT developments of the company

HP6.2: The level of Hungarian logistics providers' integration into the supply chain depends on the sector specific IT development realized by the company

HP6.3: The sector specific IT development of the Hungarian logistics service providers influences the companies' flexibility

3.1.2. Novel results of the literature review

Regarding how the evolution and operation of trust, culture and company organizations affect trust, new structures have emerged in the course of reviewing the literature (Fig. 3 and 4).

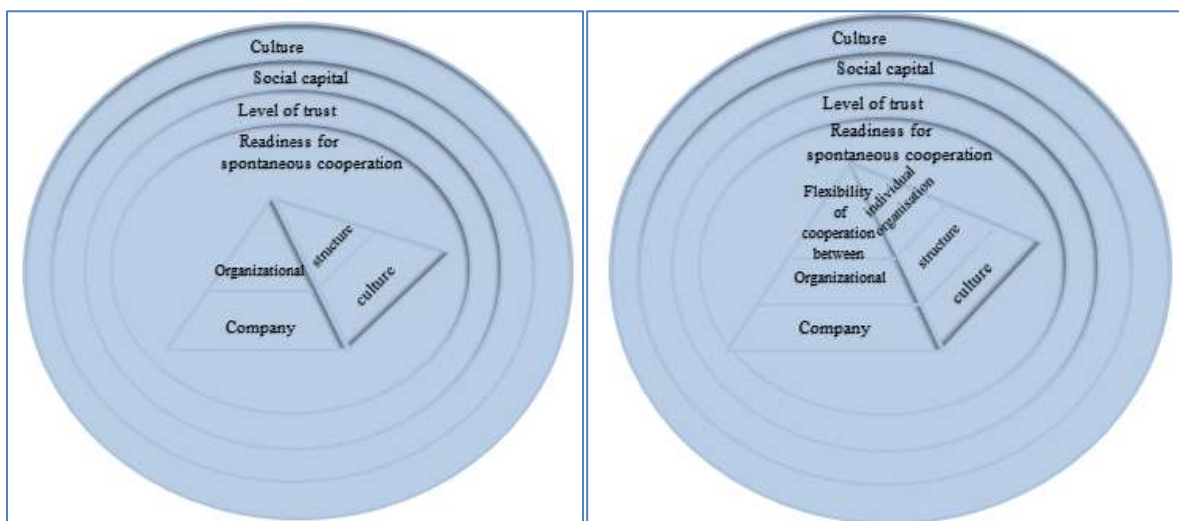


Fig. 3.-4.: Role of culture and trust in the evolution and cooperation of companies

Source: own research, 2014

Furthermore, a novel approach is incorporated into how the different levels of logistics service providers' (PLPs') are represented (Fig. 5).

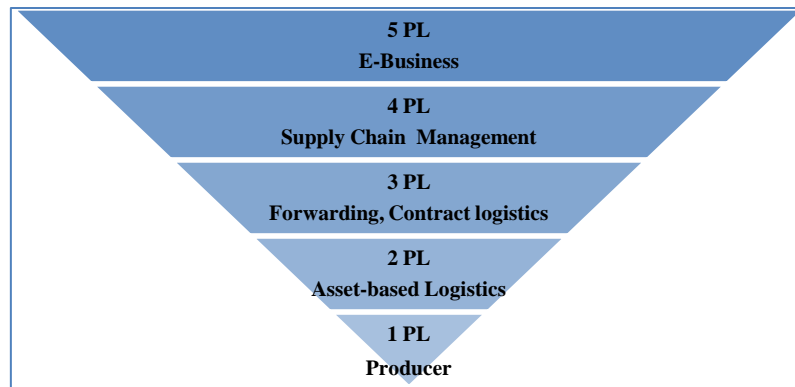


Fig. 5. The 'inverse pyramid' of logistics services

Source: own research, 2013

3.2. Research results

The hypotheses are proven by the empirical research results. *HP1*: The inner-company trust of the Hungarian logistics providers has an influence on the revenue and on the earnings before taxes of the companies. First, it has to be checked whether there is a significant difference in the levels of trust in the different categories contributing to effectiveness. The variances of the individual categories are to be examined for this purpose. If there is a significant difference, then a relationship between trust and revenue can be supposed. The perception of trust within the company (B12) and its aspects (variable group B13) are used to describe inner-company trust. According to the tests and calculations, the hypothesis is partially acceptable, and it can be used to formulate the following thesis: *TI*: Regarding the Hungarian logistics companies, higher inner-company trust (trust towards the employees) supports a positive change in the earnings before taxes of a company.

HP 2: The inner-company trust created by the Hungarian logistics service providers has an influence on the flexibility of the logistics providers examined. First, it needs to be checked whether there is a relationship between inner-company trust and the flexibility of the companies, and if there is one, how strong that is and of what type it is. For this purpose, the changes in the variance of inner-company trust needs to be examined in the different flexibility categories (B9). If there is a significant difference, the relationship between trust and flexibility can be supposed.

The results of the test show that general inner-company trust has different variances in the different flexibility categories. This means that there is a significant correlation between the two variables. As the results of the further calculations show, there is a significantly strong relationship between the general inner-company trust facilitated by Hungarian logistics companies and the flexibility of the organisation; however, this relationship is non-linear, it is polynomial, and within that, it is of the second degree. This means, that in the extreme flexibility categories (in the very flexible and in the very inflexible cases) the value of inner-company trust is significantly lower than in the case of medium flexibility. *T2*: Regarding the Hungarian logistics companies, the extreme (very low or very high) values of flexibility entail lower general inner-company trust, while in case of companies with average flexibility this inner-company trust is higher.

HP3: The level of trust in business relationships created by the top managers of the Hungarian logistics service providers has an influence on the revenue and on the earnings before taxes, and also on the flexibility of the logistics companies examined. First, it needs to be checked whether there is any kind of relationship between the level of trust in business relationships and the performance indicators or flexibility indicators of the companies, and if there is one, how strong that is and of what type it is. The level of trust in business relationships created by the top manager was measured by variables in the questionnaire: B14: management role, and B15: management style. As based on the calculations, there is no relationship between the performance indicators and the level of stakeholders' trust created by the top managers.

Regarding the second part of the hypothesis, we now examine the relationship between flexibility and the variables describing the level of stakeholders' trust. Neither indicator B15, nor B9 do suggest a significant relationship (sig.: 0.496). It is interesting to note that the averages (deviations) of the performance indicators intersected by management styles do not show a significant difference between the groups. It is clearly observable how close the averages of the performance indicators are to each other in the two groups, and the deviations are also similar. This means that a clear relationship cannot be established between the management styles of the leaders of the investigated logistics service providers and the results of the companies having participated in the survey. Thus, consequences can also not be drawn from these.

From the results of the calculations it can be concluded that there is no significant relationship between and the level of stakeholders trust created by the top managers of the Hungarian logistics service providers and the effectiveness of the investigated logistics companies, thus the hypothesis cannot be proven. However, there is a relationship between the level of stakeholders' trust created by the top managers of the Hungarian logistics service providers and the flexibility of the investigated logistics companies, and this is a positive, moderately strong relationship. This implies that the more essential is the role of the leader in creating the stakeholders' trust, the more flexible is the organization. *T3*: Regarding the Hungarian logistics companies, higher stakeholders' trust results in higher flexibility.

HP 4.1: The earnings before taxes of the Hungarian logistics providers are determined by the profitability based diversity of their service portfolio. To be able to determine the quality of the service portfolio, it is not sufficient to consider only the sheer numbers, the ranking of the different services needs to be taken into account as well. As in this hypothesis the diversity of the service portfolio is compared with effectiveness, it is reasonable to group the different service components as based on their profitability.

In this, I rely on expert estimates and data provided by leading Hungarian stakeholder organisations. I have asked 7 logistics industry stakeholders about the profitability of the different service components, and determined the relative profitability of the service components as based on their cumulated opinion. The relative level of profitability was also used to characterise the service portfolio of the individual companies. The diversity of the service portfolio is seen as the profitability weighted, cumulated value of the services provided by the companies, thus, this indicator includes both the number and the profitability of the services provided. The calculations covering the past few years signify that there is some sort of relationship between the service portfolio and the earnings before taxes. Checking by analysis of variance, there is no relationship (F sig: 0.232) between the change from the earnings before taxes in 2004 to 2005 and the diversity of the 2004 service portfolio. However, also checking by analysis of variance, there is a positive relationship (F sig: 0.023) between the change from the earnings before taxes in 2007 to 2008 and the diversity of the 2007 service portfolio. There is a negative relationship between the change from the earnings before taxes in 2011 to 2012 and the diversity of the 'present' service portfolio (SZ1 variable).

The results of the investigations show that the profitability of organisations with higher diversity has deteriorated in the last years, since there is a significant negative relationship between the two variables. Considering the steps and endeavours towards improvement made by the logistics service providers, this is a rather surprising conclusion for the on-the-field experts, so I checked this result multiple times. This unexpected result may be assumed to originate from the fact that the Hungarian logistics providers have started ‘many things’ in the past few years, provided many services, did not opt for specialization as an alternative, and this bad reaction to the growing competition yielded a decreasing effectiveness (although probably it decreased the risks).

Referring to the statements above, and relying on the empirical results emerging from investigating hypothesis 4.1, a conclusion reaching a thesis level cannot be formulated, only a summarizing statement can be made. Between the profitability based diversity of the service portfolio and the changes of the earnings before taxes of the Hungarian logistics companies:

1. There is no significant relationship from 2004 to 2005,
2. There is a positive relationship: the higher the profitability based diversity of the service portfolio, the more have the earnings before taxes increased from 2007 to 2008,
3. There is a negative relationship: the higher the profitability based diversity of the service portfolio, the more have the earnings before taxes decreased from 2011 to 2012.

HP 4.2: The profitability based diversity of the service portfolio of the Hungarian service providers has an influence on the flexibility of the companies. Although the flexibility factor can only be determined for the past years, the proof of this hypothesis is based on hypothesis HP 4.1, and the examination is carried out relying on the flexibility variable that has been used already. As based on the tests, it can be seen that the lower the profitability based diversity of the service portfolio, the less flexible is the company. There is a significant, positive relationship between the two variables. *T4.2:* Regarding the Hungarian logistics companies, there is a positive relationship between the profitability based diversity of the service portfolio and flexibility: the more diverse the service portfolio, the more flexible is the company.

HP 5.1: Growth by acquisition (search for economies of scale) supports the increase in revenues and earnings before taxes of Hungarian logistics service providers more than organic growth. I have used the net revenue and earnings before taxes data of the companies to prove this hypothesis. In order to prove the hypothesis, first it had to be checked if there was a significant difference in the net sales per employee, in case of growing and non-growing companies, when they have bought other companies and when they have not. As based on the values received and investigating the average earnings before taxes of the Hungarian logistics companies, it can be stated that there is no significant difference between the organically growing companies (45.17 – 53.1 million HUF/company) and the companies growing by acquisition (55.07 – 56.23 million HUF/company). If the same examination is carried out, but the average net sales values are considered, then the differences become more significant. Having evaluated the calculations and tests carried out during the investigation, thesis 5.1 can be formulated: *T5.1:* Regarding the Hungarian logistics companies, companies following acquisition based growth strategies reach significantly higher revenues than the companies with organic growth strategies.

HP 5.2: The mid-term, growth-oriented strategy contributes more to the increase in earnings before taxes of Hungarian logistics service providers than other strategies. The strategic time horizon variable is extracted from question B25 of the questionnaire. This is a category variable, from which the ‘mid-term’ and ‘non-mid-term’ cases need to be elicited. The growth strategy was identified from variable B27. ‘Growth’ and ‘non-growth’ strategies need to be elicited here as well. Test variable is the value of earnings before taxes, and the records are filtered according to the change in this result (whether it has increased or decreased). It can be observed that there are significant differences between the results of the companies which follow a growth strategy and of those, which do not. Nevertheless, a further examination is needed to determine the extent of this difference. Taking into account the growth dynamics of the companies, as a conclusion of the calculations carried out in the dissertation, it can be stated that there is a significant relationship between the effectiveness of the companies interviewed and their commitment towards growth (revealed in their strategy). *T5.2:* Hungarian logistics companies operate more effectively if they have a growth strategy (independently of its time horizon). This claim is only valid for those companies who have not been able to grow recently (i.e. have not been able to increase their revenues). Thus, time independent growth strategy facilitated by the leaders of the Hungarian logistics companies contributes to the company being more profitable.

HP 6.1: The revenues and the earnings before taxes of Hungarian logistics service providers depend on the sector specific IT developments of the company. First, an indicator needs to be developed in the case of each company, which indicates whether the company had any sector specific IT development recently. Then, it has to be checked whether in these categories there is (there was) significant difference between the financial indicators included in the hypothesis. The thesis can be formulated as based on the significant results of the examinations. *T6.1:* The revenues and earnings before taxes of Hungarian logistics companies depend on the sector specific IT developments at the firm.

HP 6.2: The level of Hungarian logistics providers' integration into the supply chain depends on the sector specific IT development realized by the company. The hypothesis can only be tested when a variable indicating 'the level of supply chain integration' has been created. Then it has to be checked whether its value is different in populations characterized by different levels of sector specific IT development. If it is different, then this proves a relationship between the two variables. The examination shows a significant relationship of moderate strength between the dichotomous variables, the level of supply chain integration and the sector specific IT development (whether or not sector specific IT development has been carried out). The direction of the relationship can be derived by cross tabulation. 72.7% (54.5% + 18.2%) of the companies with sector specific IT development are characterised by an average or even higher level of integration. To the contrary, 61.1% (20.7% + 41.4%) of the companies without sector specific IT development are characterized by low level or non-existent integration. The calculations described above let us conclude that sector specific IT development entails significantly (sig.: 0.015) higher level of supply chain integration. *T6.2:* The degree of supply chain integration of the Hungarian logistics service providers depends on the sector specific IT developments at the firm: companies with higher sector specific IT development are more integrated into the supply chain.

HP 6.3: The sector specific IT development of the Hungarian logistics service providers influences the companies' flexibility. First, by creating and filling up a cross tab, the number of categories and their total value can be explored. The doctoral dissertation shows that there is no significant difference in either flexibility category depending on whether there was or was no sector specific IT development. The results of the tests also prove that sector specific IT development had no influence on the flexibility of the logistics companies investigated.

Moreover, further examinations proved that there is no kind of IT development which would have an influence on flexibility. Thus, I was not able to formulate a thesis from hypothesis 6.3. Nevertheless, a summarizing thesis can be developed from the results of the 6. hypothesis-thesis group. *T6*: The revenues, earnings before taxes and level of supply chain integration of Hungarian logistic service providers depends on the sector specific IT development within the company. However, these improvements do not affect the flexibility of the firms.

The question arises, what factors do (or may) influence flexibility: the stakeholders trust created by the top manager (proved in HP3-T3), employer behaviour indicating a high level of loyalty, optimal company size, increased level of competition, or perhaps the quality of relationships that characterise the sector. These assumptions necessitate the examination of further factors, which might be part of continued scientific work, taking into consideration and building upon the present doctoral dissertation.

3.3. New scientific results

The representative, primary and empirical research carried out among the Hungarian logistics service providers proved that trust levels in general do not only positively influence the relationship of individuals in society and their cooperation (Fukuyama, 2007), and the operation of companies in general (Covey – Merrill, 2011), but, within the service sector, also the financial results of the respondent Hungarian logistics service providers. Moreover, from among the factors determining the performance perceived by the customer (Evans, 1991), stakeholders trust is significant from the point of view of flexibility (responsiveness) as well. The assumptions formulated in the hypothesis have been partially proved, and the research has yielded the following theses:

T1: Regarding the Hungarian logistics companies, higher inner-company trust (trust towards the employees) supports a positive change in the earnings before taxes of a company.

T2: Regarding the Hungarian logistics companies, the extreme (very low or very high) values of flexibility entail lower general inner-company trust, while in case of companies with average flexibility this inner-company trust is higher.

T3: Regarding the Hungarian logistics companies, higher stakeholders' trust results in higher flexibility.

Fukuyama (2007) researched trust and efficiency, and proved that trust positively influences the efficiency of business processes. This has been further developed for the case of Hungarian logistics service providers by theses 1. and 3. of the doctoral dissertation, and its positive direction has been proved in the framework of success factors: between trust towards employees and the earnings before taxes, just as well as stakeholders trust (inter-company trust) and flexibility. Reviewing trust literature, I have created two structures (Fig. 3 and 4) to represent the interconnection, the cause-effect relationships and social, cultural integration of trust. The structures forming the basis of these two figures have been translated to English, and as an attachment to an email have been sent to Prof. Fukuyama to Stanford University. He is perhaps one of the most renowned researchers internationally, who deals with trust. Fukuyama reviewed the basics of the new visualization, accepted it in his response, and, as based on the English language structures provided to him, he acknowledged the way the new, self-edited structures interconnect and their essence. Figures 3 and 4 represent own research, supporting the examination of internal and external factors and effects determining flexibility, a new way of visualizing ‘trust’s role in the evolution (and interaction) of companies’, and as such, they can be construed as new scientific results.

During the literature review of the doctoral research, for the visualization of the evolution of (Hungarian) logistics providers and their visualization in the international scientific literature, I developed a new, ‘inverse pyramid’ approach, which uses a new structure to depict the category levels of logistics companies. By the novel approach inherent in Figure 5, the ever widening service portfolio becomes more perceivable, while the increase in the complexity of the development levels is also well represented in this new visualization.

Investigating the evolution of logistics service providers, their categories and characteristics, just as well as the results from researching the hypotheses brought about further novel scientific results.

Having empirically examined hypothesis 4.1, it can be stated, that between the profitability based diversity of the service portfolio and the changes of the earnings before taxes of the Hungarian logistics companies:

- there is no significant relationship from 2004 to 2005,
- there is a positive relationship: the higher the profitability based diversity of the service portfolio, the more have the earnings before taxes increased from 2007 to 2008,
- there is a negative relationship: the higher the profitability based diversity of the service portfolio, the more have the earnings before taxes decreased from 2011 to 2012.

Referring to the statements above, the empirical results emerging from investigating hypothesis 4.1 do not enable us to formulate a conclusion reaching a thesis level. Nevertheless, the statement above is novel, as in the future it might encourage Hungarian logistics service provider companies to adopt strategies contrary to the present development endeavours of logistics companies and also contrary to the attempts trying to satisfy the complexity demands of customers.

T4.2: Regarding the Hungarian logistics companies, there is a positive relationship between the profitability based diversity of the service portfolio and flexibility: the more diverse the service portfolio, the more flexible is the company. The conclusion of *T4.2* is novel, because there is (was) at the time of research (2013) a strong, positive relationship between the diversity of the service portfolio and the flexibility of the company, as a success factor.

The research results and thesis from *HP5.1* and *HP5.2* did not bring about novel scientific results. Nevertheless, they contain important information for the leaders of the Hungarian logistics companies regarding their future decisions and the adoption of adequate business strategies and market endeavours.

T5.1: Regarding the Hungarian logistics companies, companies following acquisition based growth strategies reach significantly higher revenues than the companies with organic growth strategies, and

T5.2: The Hungarian logistics companies operate more effectively if they have a growth strategy (independently of its time horizon). This claim is only valid for those companies who have not been able to grow recently (i.e. have been able to increase their revenues). Thus, time independent growth strategy facilitated by the leaders of the Hungarian logistics companies contributes to the company being more profitable.

Research carried out to prove hypothesis *HP6.1* and *HP6.2* has proven that the sector specific IT development within the logistics service providers have a positive influence on the financial result of the companies and on their level of supply chain integration. The statements of the following two theses are to be accepted as new scientific results:

T6.1: The revenues and earnings before taxes of Hungarian logistics companies depend on the sector specific IT developments at the firm.

T6.2: The degree of supply chain integration of the Hungarian logistics service providers depends on the sector specific IT developments at the firm: companies with higher sector specific IT development are more integrated into the supply chain.

Statements of novel scientific value can be formulated as based on the results originating from the investigation of *HP6.3* as well. According to this, either sector specific or any other IT development does not have any influence on the flexibility of the Hungarian logistics companies. As a summary of theses 6.1, 6.2 and the statement above, the following ‘consolidated’ thesis can be formulated as derived from the investigation of sector specific IT investments, as a success factor:

T6: The revenues, earnings before taxes and level of supply chain integration of Hungarian logistic service providers depends on the sector specific IT development within the company. However, these improvements do not affect the flexibility of the firms.

The relationships described above are well visualized by Fig. 6.

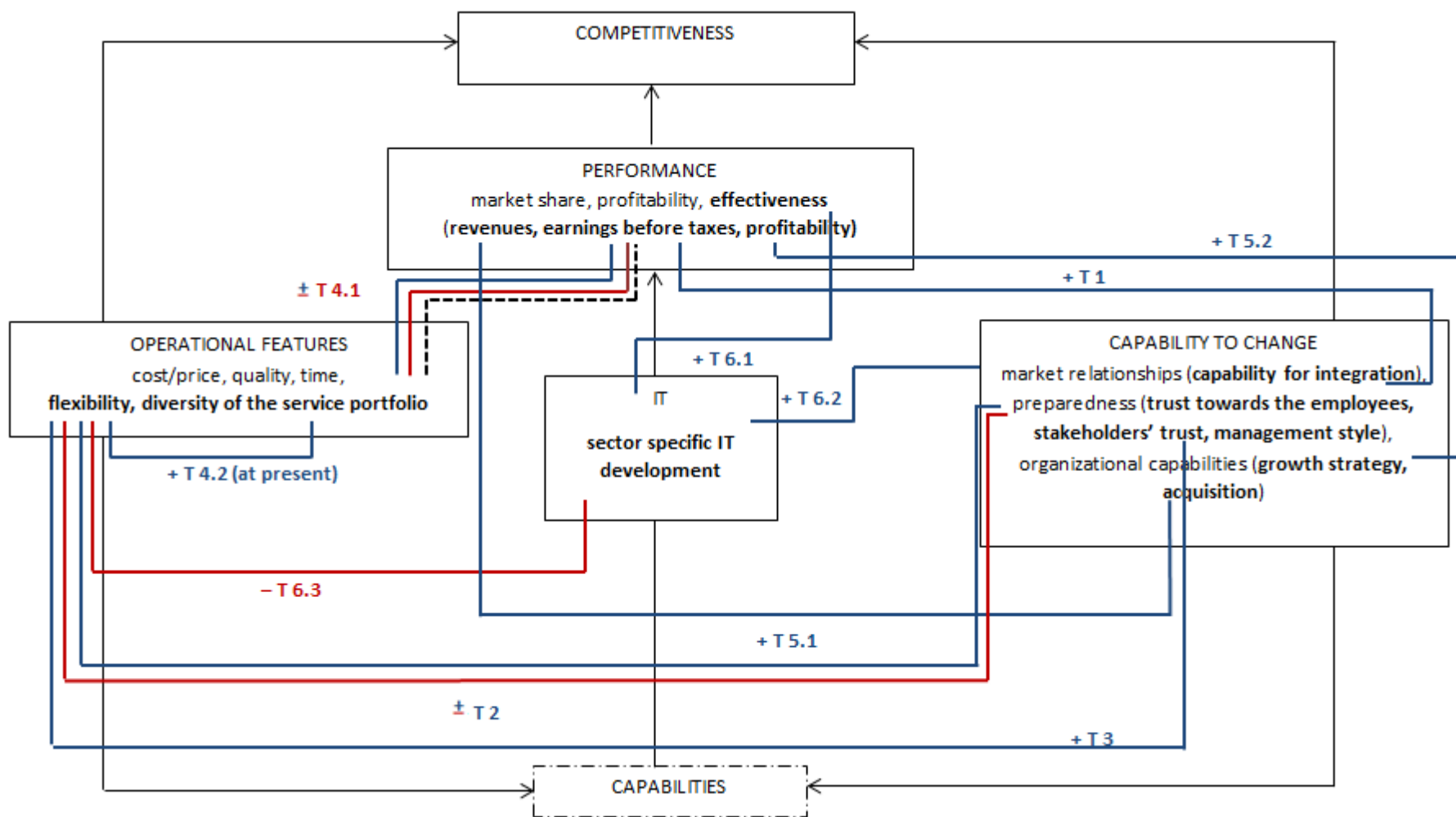


Fig. 6.: The way operational success factors affect and relate to the competitiveness of Hungarian logistics companies

Source: own research, 2014

4. CONCLUSIONS, RECOMMENDATIONS

The results of the research carried out among the Hungarian logistics service providers have proven that increased inner-company trust levels (trust towards the employees) has a positive influence on the earnings before taxes of these firms (*T1*). Further, it has also been shown that from among the factors determining the performance perceived by the customer (time factor = flexibility) stakeholders' trust is decisive for flexibility as well (*T3*). The assumptions formulated within the 'trust' hypothesis group have partially been proven, i.e.:

T1: Regarding the Hungarian logistics companies, higher inner-company trust (trust towards the employees) supports a positive change in the earnings before taxes of a company. As a conclusion it can be stated that it is worth trying to increase the trust level of the employees of the investigated logistics providers, as it has a direct effect on the positive change in the earnings before taxes of the company. It can be recommended to use management tools (sharing tasks, delegation, announcing an open door programme etc.) which help increase the trust level of the employees towards the company through the top manager.

T2: Regarding the Hungarian logistics companies, the extreme (very low or very high) values of flexibility entail lower general inner-company trust, while in case of companies with average flexibility this inner-company trust is higher. From these it can be concluded, that the extreme trust values go presumably hand in hand with company size as well. This means that companies with few employees show a high level of flexibility, as they can provide this flexibility every day thanks to the owners still present in the day to day work, and also owing to an enthusiastic, small workforce. While very low levels of flexibility might be displayed by companies with bigger labour force. Due to their level of development and culture, medium sized companies dispose of a higher trust level. It can be recommended that while searching for the right company size, the leaders of the Hungarian logistics service providers shall determine the efficient company size characteristic of service provider firms by continuous monitoring, safeguarding (and perhaps further boosting) of inner-company trust (trust towards the employees) (Heidrich, 2006).

T3: Regarding the Hungarian logistics companies, higher stakeholders' trust results in higher flexibility. As a consequence it can be stated that striving for partnership and 'thinking together' within the relationship of the consignor and the logistics provider entails better communication and closer cooperation, which generally yields a win-win situation. The extent of communication, good performance, fulfilling expectations, availability, adhering to the terms of payment all contribute to the trust evolving between the partners. In the course of creating this higher trust level, the partners gain comprehensive information about the activities and procedures of each other. This 'specific knowledge' (deeper knowledge of each other), and the timeliness of information provides a high level of flexibility of the relationship. Hungarian logistics service providers can be advised that while striving towards a partnership with consignors and subcontractors, it might be useful for them to gain a 'deeper knowledge' about each other (in the course of which **higher trust levels** are also attained), because **the fourth from among the factors, timeliness, contributing to higher performance perceived by the customer, facilitates a higher level of flexibility that can be achieved by the provider.**

It is interesting to note, that an investigation into the relationship between the management styles and financial results was also carried out while proving HP3. The result is surprising: the averages (deviations) of the performance indicators intersected by management styles do not show a significant difference between the groups. Briefly this means, that an unambiguous relationship between the style of the leaders of the investigated logistics service providers and the financial results of the companies that have participated in the research cannot be established, and following consequences cannot be drawn. However, as a new initiative, we can draw the attention of the HR directors of the Hungarian logistics companies to the statement above, and to the peculiarity (and importance) of such an approach to selection.

The following hypothesis have been investigated and partially proven, and, instead of theses, the subsequent essential statements have been formulated, in the course of processing the history of development of the Hungarian logistics service providers and the features of their different categories.

Between the profitability based diversity of the service portfolio and the changes of the earnings before taxes of the Hungarian logistics companies:

- There is no significant relationship from 2004 to 2005,
- There is a positive relationship: the higher the profitability based diversity of the service portfolio, the more have the earnings before taxes increased from 2007 to 2008,
- There is a negative relationship: the higher the profitability based diversity of the service portfolio, the more have the earnings before taxes decreased from 2011 to 2012.

Referring to the statements above, from the empirical research results of hypothesis 4.1 no thesis level conclusion can be drawn. This might mean that the research results covering the last few years are very much contrary to the relevant trends witnessed by Hungarian logistics companies, their generally accepted development efforts and the responses given by the service provider to the high complexity demand of the customer. Thus, it seems reasonable to annually re-design the service portfolio (supervising the services provided and their profitability), and also to enable specialization, since the hypothesis above urges them to consider strategies in the future which are contrary to market trends and the high complexity demands of the customer.

T4.2: Regarding the Hungarian logistics companies, there is a positive relationship between the profitability based diversity of the service portfolio and flexibility: the more diverse the service portfolio, the more flexible is the company. This thesis can be stated as based on the flexibility of the companies determined at the time of the survey, and on the 'present' data of the service portfolio. As a conclusion, it can be declared that a diverse portfolio can not only provide flexibility as a competitive advantage, but safety, alternative solutions (interoperability, exchangeability, compatibility of the services) as well. Hence, it may also contribute to a decrease in the business risks of the Hungarian logistics service provider. Although this might negatively influence profitability in certain years (T4.1), but it has improved flexibility in the year of the survey. *The Hungarian logistics providers could be advised* to take into account during the development of their service portfolio not only the profitability of certain, individual activities, but also the profitability of the complex service package, searching for the profitability optimum of the company, while also maintaining their level of flexibility.

The research results and theses yielded by investigating hypotheses *HP5.1* and *HP5.2* convey important new information to the leaders of the Hungarian logistics companies wanting to develop adequate business strategies and appropriate future business efforts. From among the alternative methods of development, it is the effectiveness of acquisition, which is investigated by hypothesis and thesis 5.1, as contrasted with organic growth. ***T5.1: Regarding the Hungarian logistics companies, companies following acquisition based growth strategies reach significantly higher revenues than the companies with organic growth strategies.*** From this, the following can be concluded: if increasing the revenues is the utmost reason for the development of the Hungarian logistics companies, then this can be reached best by acquisition. Nevertheless, this is not true for the earnings before taxes. Thus, growth is expensive, independently of whether the company grows by acquisition or organically, growth is to be financed (most of the time, from the results produced). As based on the interviews with leading logistics experts, the future pace of logistics market concentration will be determined by the market expansion of the logistics segment induced by the Hungarian producing/manufacturing companies. This will also have an influence on the market balance of organic growth and growth by acquisition. Hungarian logistics providers can be advised the following: if, due to their organic development, they grow above the rate of the market average (Bank, 2010), 5-7%, then it is worth adhering to this strategy (its risks being lower). However, if performance is below the average and/or management has initiated a more intensive growth strategy, perhaps also due to customer demand, or if it has to provide new services (the competences for which not being available within the existing structure), then, after adequate preparation, it is worth to buy other firms for the sake of development. It is recommended to use the services of external experts to prepare and carry out the acquisition efforts.

Hypothesis and thesis 5.2 looks into the effectiveness of mid-term growth strategy. ***T5.2: Hungarian logistics companies operate more effectively if they have a growth strategy (independently of its time horizon). This claim is only valid for those companies who have not been able to grow recently (i.e. have not been able to increase their revenues).*** This means that a time independent growth strategy developed by the leader of the Hungarian logistics company contributes to the company becoming more profitable.

As a consequence it can be stated, that developing a growth strategy within the company and having it accepted acts already as a self-fulfilling prophecy, as the employees and the managers believe in growth together, and they want to make it happen (independently of its time horizon). In this case, the given scenario comes true (partially or as a whole) more profitably, than in case of those who do not believe in growth, or (at least) do not have a growth strategy. Hungarian logistics companies can be recommended to develop and follow a realistic growth strategy, because, as based on the research results and the statements from the literature, along these strategies, they can be expected to operate more effectively also in the future. The results from the experiments of Taleb (2012) into human behaviour also back up this recommendation, like the psychological mechanism of anchoring and the conformance to a reference point.

Research carried out to prove *HP6.1* and *HP.6.2* has proven that sector specific IT development at the logistics service providers has a positive influence on the revenues and earnings before taxes of the companies, just as well as on their supply chain integration. ***T6.1: The revenues and earnings before taxes of Hungarian logistics companies depend on the sector specific IT developments at the firm.*** As based on my research, it can be seen that, from the point of view of financial effectiveness, the financial investments into informatics can be expected to secure more reliable returns and more profitable operations of the Hungarian logistics service provider companies. As a guideline it can be stated, that sector specific IT investments will remain important in the future as well; introducing and applying the best technologies might provide competitive advantage and higher financial results for the Hungarian logistics service provider companies. ***T6.2: The degree of supply chain integration of the Hungarian logistics service providers depends on the sector specific IT developments at the firm: companies with higher sector specific IT development are more integrated into the supply chain.*** As a consequence it can be stated, that the services made available and offered by sector specific IT investments represent themselves as services overarching the borders of the logistics provider, and provide adequate process efficiency support to the members of the supply chain. Process integration of the logistics provider may be better realized via the ‘common’ IT usage, especially, if the integration capability of the provider is high (e.g. partner is member of several organisations and clusters).

As a proposal, the guidance inherent in thesis T6.1 can be accepted by stating that sector specific IT investments will be important as well, and beyond the financial results, introducing and applying the best technologies provide a competitive advantage and a higher level of integration for the Hungarian logistics service provider companies. Having examined hypotheses 6.1, 6.2 and 6.3 and consolidating the results, the following consolidated thesis can be formulated: **T6: The revenues, earnings before taxes and level of supply chain integration of Hungarian logistic service providers depends on the sector specific IT development within the company. However, these improvements do not affect the flexibility of the firms.**

It can be concluded, that sector specific IT developments have a positive influence mainly on financial effectiveness and integration, and not on the flexibility of the companies. This may also indicate that sector specific IT investments improve process efficiency and service quality, while they do not enhance the responsiveness of the service provider expected by the customer, i.e. flexibility. This may primarily be due to company size, as those companies, which have invested in sector specific IT technology may be supposed to be bigger than those, who have not. Hungarian logistics service providers may be recommended not to expect the improvement of their flexibility from sector specific or any kind of IT development, but more from the behaviour of their employees and from the stakeholders' trust created by the top manager (T3).

Operational success factors can be summarized and prioritized as follows: first is trust, second is sector specific IT development, third is strategy choice, while the fourth is the profitability based diversity of the service portfolio. Their priorities, the order of their improvement and the extent of the relevant resources may have a significant influence on the development of the factors (like flexibility) determining the competitiveness of the Hungarian logistics service providers.

Relying on the results from the dissertation and incorporating further literature, additional, extensive research can be carried out in the target group, e.g. by looking for new success factors. By further developing the research methodology, additional and more detailed results can be obtained from the data available, or – as a novel research area – the (comparative) analysis of the logistics service providers active in neighbouring countries may also contribute with new results to facilitate a better understanding of the target field (the given research area). The results of the dissertation are useful for experts in the field as well, and thanks to the publications they are available to them in a language understandable for managers of practical orientation. The consequences convey important information to the managers of the Hungarian logistics service providers – negating the statement of Taleb, who says that ‘... free market is working not because it rewards and encourages expert knowledge, but because it enables citizens to try their luck and to move forward using the »trial and error« method. Thus the winning strategy is to try as much as possible ...’ (2012, 21. o.). The scientific results support the managers of the Hungarian logistics service providers in making the best possible decisions for the future.

The scientific results of the dissertation will be incorporated into the curricula of the Hungarian higher education (College of Szolnok, courses: International Logistics and International Forwarding and Shipping). Furthermore, some of its statements will be integrated into the material issued to the students in a printed form as part of the college lecture notes in 2014 (in the lecture notes to be published in spring at the Budapest Business School: Horváth – Karmazin, National and international forwarding and shipping, planned editor and publisher: Akadémia Könyvkiadó).

5. THE MOST IMPORTANT PUBLICATIONS OF THE AUTHOR

I. Articles in scientific journals

Foreign language articles in scientific journals

Karmazin Gy. (2011): The introduction of fleet management system (FMS) in BI-KA Logistics Ltd., in: Madaras Lászlóné et. al. (Ed): *Economica*, Vol. IV., Special Issue, Szolnoki Főiskola, pp 13-18., ISSN 1585-6216

Bokor Z. – Markovits-Somogyi R. – Karmazin Gy. (2013): Railway efficiency of Central- and Eastern European countries. In: Jozef Gašparík (szerk.): *Horizons of Railway Transport*, Faculty of Operation and Economics of Transport and Communication, No.1. Vol.3. 2012., University of Žilina, Slovakia, pp. 87-97. ISSN 1338-287X

Karmazin Gy. – Markovits-Somogyi R. – Bokor Z. (2013): Effects of infrastructure extension on the competitiveness of Hungarian logistics providers. In: Kuczmann M. (szerk.): *Acta Technica Jaurinensis*, Vol. 6. No. 4. 2013, Széchenyi István Egyetem, Győr, pp. 71-78. ISSN 1789-6932

Karmazin Gy. (2014): Research results on the key success factors of Hungarian logistics service providers. In: Péter T. (ed.): *Periodica Polytechnica*, Vol. 42. No 1., January 2014, pp. 1-5, ISSN: 1587-3811

Hungarian articles in scientific journals

Karmazin Gy. – Máté Z. (2007): Logisztikai marketing a gyakorlatban. In: Bokor Zoltán (főszerk.): *Logisztikai Évkönyv 2007-2008*, Magyar Logisztikai Egyesület, Budapest, 217-221. old. ISSN: 1218-3849

Karmazin Gy. (2012): A használatarányos útdíj magyarországi bevezetésének hatásai a piac szereplőire. In: Bokor Zoltán (főszerk.): *Logisztikai Évkönyv 2013*, Magyar Logisztikai Egyesület, Budapest, 237-242. old. ISSN: 1218-3849

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Karmazin Gy. – Ulechla G. (2013): A termékek és szolgáltatások kombinációjának hatása a logisztikai szolgáltatókra. In: Bokor Zoltán (főszerk.): *Logisztikai Évkönyv 2014*, Magyar Logisztikai Egyesület Budapest, 86-90. oldal, ISSN 1218-3849

II. Presentations at scientific conferences, published in conference proceedings

International conferences

Karmazin Gy. (2011): Introduction of fleet management system (FMS) in BI-KA Logistics Ltd. The FMS' effect on competitiveness of market players, CD, 35th Conference of Teachers of Mathematics, Physics and IT (MAFIOK), Szolnok, 29-31. August 2011., Szolnok College, Madaras Lászlóné, pp. 1-8., ISBN: 978-963-89339-2-8

Hungarian conferences

Karmazin Gy. (2010): Innovatív megoldás a logisztikában - flottamenedzsment rendszer bevezetése az érintett vállalatok hatékonyságának növelése érdekében, CD-kiadvány, Legjobb gyakorlat a logisztikai menedzsment területén - Középpontban a hazai kis- és középvállalatok konferencia, Budapest, 2010. szeptember 6., Budapesti Corvinus Egyetem Gazdálkodástudományi Kar, Logisztika és Ellátási Lánc Menedzsment Tanszék, Gelei Andrea 1-15. oldal, ISBN 978-963-503-415-4

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Karmazin Gy. (2012): A használatarányos útdíj magyarországi bevezetésének hatásai a piac szereplőire. In: Fejér-Király Gergely – Lázár Ede (szerk.): *Vállalkozói és gazdasági trendek a Kárpát-medencében*, I. kötet, Státus Kiadó Csíkszereda, Vállalkozói és gazdasági trendek a Kárpát-medencében című konferencián elhangzott előadások 2012. április 20-22., Sapientia Erdélyi Magyar Tudományegyetem, Gazdaság- és Humántudományok Kar, 247-258. oldal, ISBN 978-606-8052-76-2

6. CV

Born on 12th July 1966, Szolnok, Hungary
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Education:

In 1991, he acquired a degree in *Transportation Engineering* at the Faculty of Transportation Engineering, Budapest University of Technology. In 2001 he successfully completed the *transport manager - marketing engineer* postgraduate training also at the Budapest University of Technology. In 2010 he began his studies at the *Doctoral School of Management and Business Administration*, at the Szent István University.

Employment and work experience:

In 1991, he founded *BI-KA Logistics Ltd.* of which he has been managing director ever since, as well as managing director of *BI-KA Trans Ltd.* since 1997. Since 2010, he has been honorary associate professor at the *College of Szolnok* and since 2013 he has been the co-owner and general manager of *Adversum Ltd.*

Projects in which he acted as a logistics consultant:

He participated in the following projects: the development of the handling and storage system of *BVM Épelem Előregyártó és Szolgáltató Kft.*, the analysis of the operating processes system of *DGA Kft.* at Nemesgulács, the development an optimal and cost-effective storage technology for *Szido Kft.*, the optimization of the logistics processes at *Antalis Hungária Kft.*, the optimization and development of the national transport-distribution system of *Prímagáz Zrt.*, just as well as the storage system of *Kasz-Coop Kft.* (a trader of agricultural components).

His professional activities at the College of Szolnok:

He is lecturer at the College of Szolnok and since 2010, he has been honorary associate professor giving the following courses: Road transport in practice (2003–), International transport in practice (2004–), International logistics I-II (2005–), Logistics case study (2006–), Logistics Management (2013–), Supply Chain Management (2013–). He is member of the Competency Council at the College of Szolnok.

His professional and scientific pursuits in the last 5 years:

He is member of the board of the Hungarian Association of Logistics, Purchasing and Inventory Management. In 2006, he was awarded the ‘Certified Logistics Specialist’ title of the Hungarian Association of Logistics, Purchasing and Inventory Management – Hungarian Logistics Association. Also in 2006 he became the ‘Logistics Manager of the Year’ and his firm was awarded ‘Company of the Year’. In 2009 he earned the title ‘Contractor of the year 2009’ and in 2010 he was given the ‘Award for the Hungarian Economy’.

In 2013, the Hungarian Association of Logistics, Purchasing and Inventory Management honoured him with the title ‘Logistics Magister’ and as he was also granted the Economic Award of the Jász-Nagykun-Szolnok County.

Scientific / professional public activity, international relations:

He is constantly publishing and revising articles of professional journals and yearbooks. He is an invited lecturer of professional conferences and organizes the highly popular Economic Forum in Szolnok twice a year.

Languages:

English – general complex (‘C’) language exam at intermediate level

Italian – general complex (‘C’) language exam at basic level

Hobbies:

5 Dan karate master, president of the Shinkyokushin Martial Arts Federation, he is jogging regularly.