METHODOLOGY FOR SELECTION OF ECONOMIC PERFORMANCE FACTORS IN THE AREA OF INFORMATION AND COMMUNICATION ACTIVITIES

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Abstract

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The article presents one part of the research work of the author that is focused on the business performance. The aim of this paper is to find and introduce economic factors of corporate performance system that are important part of the performance, because can help to organization define and measure progress toward organizational goals. The aim also included the determination of Key Performance Indicators (KPIs). The first step for the evaluation of performance is the projective access. This approach is meant, that the performance in terms of the future development of the company it is possible to conclude on the basis of, and ongoing activities. In relation to this idea are as fundamental the economic indicators of the performance scale. To find these factors were used the theoretical information from the area of KPIs and data from primary research. This data were tested through mathematical-statistical analysis, in this case, directly on the basis of factor analysis.

Keywords: business management, performance, indicators, factor analysis

INTRODUCTION

Evaluation of performance is currently an integral part of business management, the results of which are important not only for the management of the company, but also for other interested parties that the enterprise in question comes into contact with. Companies can choose from several methods of dealing with performance evaluation with regard to the management company, it is up to them to decide whether to commit more to financial or non-financial indicators, or whether they will choose one of the methods of a comprehensive performance evaluation.

Author Maria (2009) highlights the often-discussed topic, which is the analysis of the economic and financial performance. In particular, on the part of economists, management, or other specialists, it is important to evaluate the economic performance of the enterprise in a simple and fast way. The last time is increasingly more emphasis on the determination of whether the company is able to increase its value and provide the corresponding yield from the investment of the lenders. For the basic goal of most businesses is generally seen as maximizing and increasing the market value in the longer term. The economic performance of the enterprise is, however, a need to further analyze and evaluate. Just for this purpose was created by a large number of different methods. In practice, about the most common and most widely used method is the evaluation of the financial and economic performance of the enterprise by using the fundamental or technical analysis, which assesses the business just from the economic point of view, on the basis of a detailed study and analysis of financial statements (Fisher, 1992; Chow, Van der Stede, 2006).

Each area of business performance is important due to the result of his vision and strategy, it is appropriate to identify key performance indicators that can be constantly improved and thus improve their performance.

THEORETICAL BACKGROUND

In the area of measuring performance is necessary to focus on indicators. The most critical page does not consist in the identification of indicators, but rather to identify those that are appropriate to represent the process itself, the so-called Key Performance Indicators (KPIs). As stated by the author Marinič (2008) and Parmenter (2010) once defined the correct key indicators that reflect the goals of the company (those that can be measured), it is possible to use these performance indicators as a tool for performance measurement. It just depends on from which perspective entities inside and outside the company to build a performance approach and the purpose of the performance monitor.

In general it can be said that these indicators represent a set of measures which are aimed at those aspects of organizational performance that are most critical for the current and future success. According to Parmenter (2010), there are four types of performance metrics:

- Key Result Indicators (KRIs) – that tell us how we fared in a particular area or in terms of critical success factors. Very often are confused with KPIs. They provide a clear picture of whether the organization is going in the right direction and if not, tell us what we need to do in order to do so.
- Result Indicators (RIs) – given what we have done. Summarizes activities relating to all financial activities. If we want to fully understand where it is necessary to increase or decrease performance, we must look at those activities that create sales.
- Performance Indicators (PIs) – indicate what we do. These indicators help the enterprise to achieve the strategies. These are mainly non-financial indicators that complement the KPIs.
- Key Performance Indicators (KPIs) – are certain instruction that tells us what we should do to significantly improve the performance of the company. It is therefore a set of metrics, focusing on those aspects of organizational performance that are most important to its current and future success.

Performance metrics are usually a combination of these four types. Harvey (2005) to this matter is expressed in the sense that no matter which KPIs are used, these should mainly reflect the strategy, and should be regularly adapted to the changing business environment. Allio (2006) adds to metrics that good (well chosen) metrics facilitate the implementation of corporate strategies, while the bad (wrongly chosen) or no metrics, they can even implement the strategy to defend (Kocmanová *et al.*, 2013; Kerzner, 2011).

Milichovský (2013) states the system of KPIs indicates criteria, adopted in evaluating the employee's performance, which support corporate performance. There is important the orientation of the company.

In the Czech Republic currently prevailing classical approach to the assessment of business performance, based on the monitoring of standard indicators of financial analysis. The most commonly used indicators are: return on equity (ROE), return on assets (ROA), return on sales (ROS), indicators favorite by managers primarily for its relative ease of construction and interpretation of results, enabling targeted management. Data are presented by the Czech Statistical Office under the Economic results of Industry in 2011 (Czech Statistical Office, 2013). This fact was also confirmed on the basis of the author's doctoral thesis where companies have chosen the systems of performance evaluation, while 40% of them use financial indicators for evaluation and 37.5% focuses on the comparison of the actual state of the plan. Other options (benchmarking, Balanced Scorecard or Total Quality Management) reached insignificant values.

METHODOLOGY

The basis of the empirical research was a questionnaire prepared within the frame of the doctoral thesis of the author. Research was focused on IT companies (based on classification of economic activities according to CZ-NACE, reduced in section J – Information and Communication Activities) in the Czech Republic, with the number of employees over 250. Basic sample was made by 56 companies, author gathered data from 32 companies (the effectiveness was almost 57%). The research was conducted in the first half of the year 2013, due to the pending economic data of the year 2012, was acquired in 2011.

All calculations were analyzed by the statistical program IBM SPSS Statistics 20, using a combination of different statistical methods.

The economic indicators were identified by a factor analysis. Factor analysis is a method by which we try to replace the relationship between several mutually-knit small number of variables not directly observable characteristics factors. This is also determined by its primary function – data reduction, i.e., reduction of variables.

The statistical program SPSS allows calculation factors using by two statistical tests that indicate the suitability of the data for the structure factors. It is KMO (Kaiser-Meyer-Olkin) measurement test of the adequacy and Bartlett's test of sphericity.

Value range of KMO takes the value 0.611 and suggests the appropriateness of using factor analysis, because the value is between 0 and 1, and in this case the value is closer to 1, which means the variable correlates perfectly with itself (approximate to 1), where there is no correlation with the other variables (approximate to 0). Also, Bartlett's test leads to rejection of the null hypothesis that the correlation matrix of variables of the unit (as observed significance level is equal to 0.000). This means that the correlation coefficients between

I: *Rotated Component Matrix*

Indicator	Factor			
	Profitability	Cash-flow	Returns	Indebtedness
ROE	**0.927**	0.036	0.019	–0.129
ROA	**0.949**	–0.097	–0.028	0.013
ROI	–0.141	0.001	**0.877**	–0.028
ROS	0.328	–0.194	**0.708**	0.177
EBIT	**0.704**	–0.296	0.033	0.492
Liquidity	0.024	**0.686**	–0.119	0.311
Indebtedness	–0.049	0.294	0.063	**0.861**
EVA	–0.403	0.376	0.483	–0.330
Operating CF	–0.122	**0.931**	–0.004	0.014
Total CF	–0.117	**0.924**	0.010	0.011
Cronbach's alpha	0.860	0.850	0.542	-

Source: own research

variables are not zero and is thus fulfilled a basic requirement for application of factor analysis.

The result of factor analysis is rotated component matrix that is used to interpret the factors. The determination of economic performance indicators of these companies were based on a questionnaire-type survey per Tab. I.

In extraction were divided all components into new four strongest component groups. These groups are normally indicating names that capture the essence of what that factor expresses; in this case it is a factor of profitability, cash-flow, factor of returns and indebtedness. Tab. I also presents Cronbach's alpha value, which serves to verify the reliability or reliability, as part of the methodology of analysis items. Cronbach's alpha takes values from 0 to 1, where 0 indicates that the individual sub-indicators are totally uncorrelated. Cronbach's alpha is thus analogous to a correlation coefficient (Hrach, Mihola, 2006).

Based on Tab. I, the factors "profitability", "cash-flow" and "returns" can be used in the factor analysis as a variable in the context of these factors correlate with each other. Factor "indebtedness" cannot be used because it is saturated with only one variable.

These three selected groups are basis for further processing in terms of identification performance factor.

RESULTS AND DISCUSSION

The last step of factor analysis is construction of a new variable. Based on the research survey, it was found that of ten indicators used to evaluate economic performance, it is possible to create a new variable only with eight items. Factor analysis indicates that these variables (indices) are needed to create such quantities as were extracted, in this case three. Calculation of the factor score is basically the calculation of the profitability, returns and cash-flow factor for the various businesses in which each item is assigned a weight factor loadings (see Tab. II).

On the basis of the individual factor scores were compiled new variables, which make it possible to calculate these factors for individual companies. The new variable is often referred to as the factor score or index factor. It is a weighted summation

II: *Coefficients of factor loadings*

Indicator	Factor		
	Profitability	Cash-flow	Returns
ROE	**0.444**	0.155	0.032
ROA	**0.412**	0.085	0.001
ROI	–0.040	–0.007	**0.574**
ROS	0.108	–0.052	**0.472**
EBIT	**0.198**	–0.086	0.037
Liquidity	0.050	**0.268**	–0.069
Indebtedness	–0.121	0.031	0.049
EVA	–0.066	0.149	0.311
Operating CF	0.069	**0.388**	0.005
Total CF	0.071	**0.386**	0.014

Source: own research

III: *Evaluation of business results by a factor of profitability*

Rank	ROE	ROA	EBIT/employee to total EBIT	Factor of profitability	Company
1	1.2097	0.6351	0.000981	75.78%	24
2	0.5866	0.2737	0.003984	35.47%	3
3	0.5558	0.148	0.000582	29.20%	6
4	0.4139	0.1943	0.003058	25.08%	16
5	0.3386	0.2763	0.00034	25.06%	8
6	0.2671	0.2288	0.001832	20.23%	19
7	0.2952	0.1665	0.000741	18.95%	15
8	0.2975	0.1575	0.000516	18.69%	5
9	0.2231	0.128	0.001815	14.43%	28
10	0.1835	0.1533	0.003195	13.78%	4
11	0.154	0.1787	0.003745	13.54%	12
12	0.179	0.0911	0.002358	11.14%	25
13	0.158	0.1124	0.001486	11.07%	27
14	0.1448	0.1125	0.000171	10.50%	13
15	0.172	0.0693	0.001548	9.98%	2
16	0.1581	0.0334	0.002028	8.00%	11
17	−0.0683	−0.015	0.001495	−3.43%	14
18	0	−0.1107	0.001524	−4.30%	9
19	−0.0791	−0.0481	0.002778	−5.16%	10

Source: own research

range, i.e., respondent answers to each question carried factorial loads (weight responses are multiplied by a weight factor and summed individual responses). Given that the factor score represents the weight of the variables, their sum should give a value of 1. For this reason, the coefficients of factor loadings converted relative to the total for that factor. The newly created variables are as follows:

$$\text{Index factor of profitability} = \text{ROE} \times 0.421 + \text{ROA} \times 0.391 + \text{EBIT} \times 0.188,$$

$$\text{Index factor of cash-flow} = \text{Liquidity} \times 0.257 + \text{Operating CF} \times 0.372 + \text{Total CF} \times 0.371,$$

$$\text{Index factor of returns} = \text{ROI} \times 0.549 + \text{ROS} \times 0.451.$$

These indexes can be calculated for the individual of the research and on the basis of their results can compile a list of businesses. In the author's doctoral thesis the calculation was performed using the newly created variable – the index factor of profitability. It includes ROE, ROA and EBIT. The first two factors have been identified in percentages, last one in absolute value, so it was necessary to convert into the same units as the previous two. For better expression was calculated EBIT per employee, and this result was related to total EBIT. Thus, the indicator is expressed as a percentage, as well as both the viability and profitability index factor could be calculated for the individual businesses.

The necessary data has been detected from 19 companies. The order of business of the highest profitability factor calculated values is shown in the following Tab. III.

The best result was achieved in the company No. 24, the profitability factor is 75.78%. To this end it certainly helped high ROE which exceeds 120%, while also ROE reached high values. The difference between first and second place is relatively large, the second factor in the profitability of the company is 35.47%, again influenced by higher ROE and ROA. At other positions (up to about 9th place) the results are very similar. In contrast, companies in the last position reached negative values. Always at least one of the indicators took on a negative amount. The company with the worst factor in profitability reached number −5.16%. ROE and ROA were negative in this case, presumably because of negative EBIT.

From the obtained results Tab. III can serve businesses to compare individual values of such indicators and also to their own self-esteem through benchmarking.

This methodological approach chosen consisted in the specification, gathering, analysis and interpretation of data to serve as a basis for the decision on the choice key performance indicators.

Selected methodology of contribution consisted in the specification, collection, analysis and interpretation of data, which should serve as a basis for defining homogeneous groups of used economic indicators in terms of assessing their impact on business management.

CONCLUSION

The article is focused on the area of economic performance in relation to KPIs. The main aim is to present the methodology for selection of performance indicators from the economic area.

The context of business performance can be evaluated by many methods. As demonstrated the empirical research of this article, the assessment of performance can be evaluated based on financial or economic data, which are, however, for some business insufficient. These approaches, however, cannot be denied their simplicity and clarity. Important in the management of companies are objective values, which are determined mainly by owners of the company, but the strategic success of the entity are increasingly affecting its customers and employees. Currently it is a "necessity" also includes any of the non-financial indicators in evaluating the performance of the company, but that does not mean that the classical approaches of performance evaluation losing its importance.

Empirical research deals with factor analysis that gives up reduction of surveyed indicators. Based on the performed research were defined three factor groups: Profitability, Cash-flow and Returns. These groups contain indicators that are important part of the corporate strategic process, because well-defined KPIs can help the companies to plan and control their priorities. In connection with this fact is the economic aspect currently one of the important area of business management. Company is able to create a comprehensive performance evaluation system that measures the economic indicators and thus can assess how strong the company is on the overall.

In conclusion, it should be noted that the informative value of the research could be enhanced if it were more businesses. Even though the number of respondents was low enough that it is not possible to evaluate data and formulate some conclusions.

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