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PROFIT INDICATORS IN PERFORMANCE SYSTEMS IN THE CZECH COMPANIES

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Abstract

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The main focus of the paper is the corporate performance measurement. At present, it is necessary to monitor this corporate performance and mostly try to improve it, because it could be very crucial competitive advantage in the market. The article provides an overview of key performance indicators (KPIs) in the companies. Based on the theoretical data there are applied statistical methods, which should be achieved of main aim of the paper. The main aim of the paper is to describe which groups of Key Performance Indicators are connected with corporate performance system of measurement in the area of Information and Communication Activities. To support this approach theoretical information from the area of Key Performance Indicators connected with data from primary research were used, focused on the performance evaluation of enterprises.
Successful companies are aware of the need for long-term strategic development, which is based on teamwork, respect of external environment and all subjects, which influence the business activities of the company directly or indirectly. It can be more effective to conceptualize relationship complete than limit to only consumer market and customer relations. Marketing moves more and more away from individual transaction orientation and rather focus on value creating relations, where the objective is to provide long- term stakeholder value. Day after day the company gets in touch with different groups of stakeholders, that influence the corporate development and it can not to access to these interest groups individually for reason of corporate limits. It is therefore necessary to define homogenous stakeholders groups, which are differ from each other in terms of their impact on business management. The authors of article put the question, which classification is the most statistical explaining the difference of stakeholders in term of evaluation their impact on business management. It was made cluster analysis for data mining including its graphic presentation through dendogram by statistical software IBM SPSS Statistics 20 to obtain relevant answer.

performance, financial indicators, measurement, KPIs, Czech companies

The topic of this paper is the performance measurement, which can help to companies organize daily activities to achieve strategic goals. Kaplan and Norton (1992) describe performance measurement as a way to review an organization's financial and non-financial goals. Indicators, that are used, we can classify as the performance indicators. This is a group of indicators that focus on the most critical areas for current and future development of the company. As we mentioned in the abstract of this paper, the performance is very crucial competitive advantage in the market and it should be in the interest of the enterprises monitor key indicators and factors.

The company can improve performance by creating and implementing such a system performance measurement and management, which will be used in accordance with the vision and strategy of the company and will integrate the different views of the performance – a view of the customer, the business owner, manufacturing and financial manager. Historical perspective on

performance measurement and management shows the evolution from traditional approaches based on the measurement of financial standards – profit, profitability, cash flow approaches to modern measurement value for the owners and shareholders (Aschenbrennerová, 2010).

Performance measurement should be integrated with the overall strategy of the business and should include comprehensive criteria (i.e., both financial and non-financial indicators) that an organization can establish within its programs, investments, and acquisitions for reaching the desired results. These criteria can help organizations identify performance problems, address root causes, drive improvement activities, and bridge the gap between short-term market or stakeholder expectations and the long-term business or organizational goals/objectives. In addition, performance measurements must be prioritized and focused so that only the strategic terms of the KPIs for the business are measured (Lima, Costa, Angelis, 2009; Wu, 2012).

The main aim of the paper is to find key clusters of corporate performance system, which are in Czech IT companies important. To find these clusters there were used theoretical information from the area of KPIs and data from questionnaire survey as primary research. This data are applied by statistical evaluation of selected indicators which could help determine the significance of the indicators in the monitored area.

Theoretical background

The current economic environment creates high competitive pressures that are reflected in innovation, defined business strategies. Competitive strategy has always been an integral part of the development and application of the market each business. It led to the company vision and satisfaction of owners and managers. With the increasing dynamics of the business environment began to grow and demands on competitive strategy. These competitive strategies focus primarily on customer groups. However, these strategies may focus on competitor activities and proactive seekers of foreign expansion (Koleňák, Koleňáková, 2012).

Performance measurement is an important tool for sustainable management. Well-defined indicators can potentially support the identification of current and desired performance and provide us with information on the progress of individual performances. In addition, it can be a link between strategy and management, thereby promoting the establishment and implementation of initiatives related to the improvement company (Maria, 2009; Muchiri *et al*., 2010).

Performance measurement can be defined as a system by which a company monitors its daily operations and evaluates whether it is attaining its objectives (Lebas, 1995). A series of indicators that properly reflects company performance objectives should be set up to fully utilize the function of performance measurement. These indicators can be quantifiable or unquantifiable.

As the author Marinič (2008) and Parmenter (2010) mentioned, once defined the correct key indicators that reflect goals of the company (those that can be measured), it is possible to use these performance indicators as tools for performance measurement. It depends on the perspective how entities inside and outside the company approach to performance process, and why they monitor own performance. Measurements can be divided according to the type of key indicators and results. The measurable key indicators should be divided according to their essence into several groups (Smith, 2008; Zaherawati *et al*., 2011; Samsonowa, Buxman, Gerteis, 2009):

- Result indicators are focused on achieving the objectives of indicators (Key Goal Indicators – KGI). They represent a measure of success and verification success. Indicate whether the goal has been achieved.
- Performance indicators (efficiency) are focused on performance measurement and its support (Key Performance Indicators – KPIs). They are used to quantify objectives to reflect the performance of a process or service. They are usually used for measuring the value, efficiency, quality, and customer satisfaction. Indicators, contained in KPIs, must reflect business objectives, must be measurable and should become a key to success. Key Performance Indicators (KPIs) provide companies with a tool for measurement. KPIs help companies to implement strategies by linking various levels of such companies with clearly defined targets and benchmarks.
- Key Result Indicators (KRIs) includes information about many activities which have done and if company goes to right direction. KRIs provides such information which is prepared mainly for top management.

Performance can rise by using selected tools, mainly by creating and implementing system of performance measurement and management, which will be used in accordance with the corporate vision, mission and strategy and will integrate different perspectives on performance. From point of owners' view, there is important to stipulate whether value of the company is rising and gives appropriate Return on Investment (Kocmanová, Dočekalová, 2011).

Typical examples of KPIs indicators could be derived into groups of financial and non-financial indicators – for example market share, economic value added per employees, Return on capital employed, Return on equity or number of employees (Milichovský, Šimberová, 2011; Kocmanová, Hornungová, Klímková, 2010; Hřebíček, Soukopová, Štencl, Trenz, 2011).

The KPIs includes huge amount of individual indicators of different fields which have to be controllable. Therefore KPIs reflects goal of

performance management system in improving effectiveness (Kerzner, 2011; Parmenter. 2010).

According the study of Eckerson (2009) and Gabčanová (2012) were described the main characteristics of 'good' KPIs:

- Sparse: The fewer KPIs the better.
- Drillable: Users can drill into detail.
- Simple: Users understand the KPI.
- Actionable: Users know how to affect outcomes.
- Owned: KPIs have and owner.
- Referenced: Users can view origins and context.
- Correlated: KPIs drive desired outcomes.
- Balanced: KPIs consist of both financial and non-financial metrics.
- Aligned: KPIs don't undermine each other.
- Validated: Workers can't circumvent the KPIs.

The second part of the paper is statistical part. Especially, it is aimed to the cluster analysis. The main aim of the cluster analysis is to classify *n* objects (in this case regions), out of which each is described with *p* attributes (in this case indicators) into several, preferably homogeneous, groups (clusters). That is through derivation of indicators into higher grade. The highest level of the derivation (or aggregation) is so-called super-indicator (see Fig. 1) which includes all performance indicators together into one final cluster (Franceschini, Galetto, Maisano, 2007).

We require the objects into the clusters to be as similar as possible, while the objects from different clusters as dissimilar as possible. The precise number of clusters is usually not known. A cluster analysis is an investigation method – it should serve as a certain guide for further data processing (Budíková, Lerch, Mikoláš, 2005).

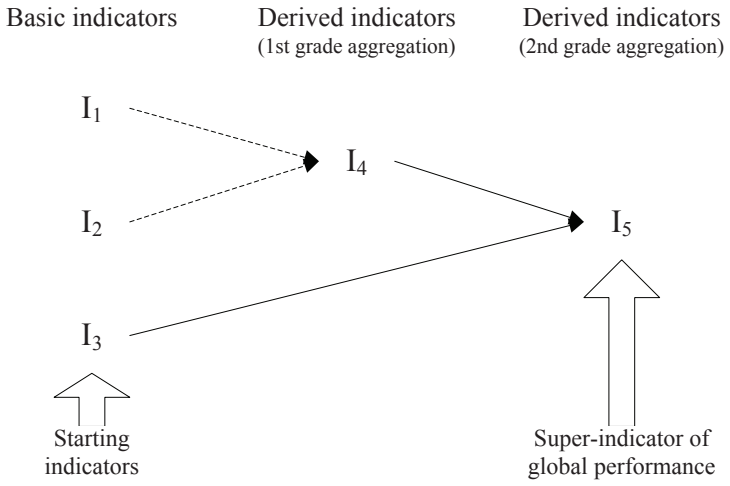
MATERIALS AND METHODS

The first part of the paper presents main secondary information, which was processed by many scientific articles and literature. The next, and the main part of the paper, is to introduce research data that were obtained from the primary research. Whole primary research was focused on the performance evaluation of enterprises (in the area of economic, social and environmental performance) in the Czech Republic. The primary research was designed by questionnaire survey, focused on IT companies in Czech Republic in 2011. Questionnaire has been compiled on the basis of achieved theoretical knowledge, defined areas of solved problem and specific objectives, so that they obtained results may contribute to the setup of KPI for the companies in selected area. The conditions for choice of companies were combination of:

1. Size of company (number of employees over 250),
2. Geographical location (Czech Republic),
3. Classification of economic activities according to CZ-NACE, reduced to information and communication area:
   - 60 – Programming and broadcasting activities,
   - 61 – Telecommunications,
   - 62 – Computer programming, consultancy and related activities,
   - 63 – Information service activities.

Basic sample was made by 32 companies to which were the questionnaire sent. From this amount of 32 companies we received answers from 23 companies (effectiveness was almost 72 %). In the paper there is utilized only one part of economics area. This count has been designed in different industry fields.

Results and discussion of the paper are based on the analysis of secondary sources and selected part of questionnaire survey, which are involved on measuring the performance of Czech companies. To process the results of the questionnaire survey were used both of basic types of descriptive statistics and cluster analyze on the selected data set. The data were processed by using the statistical program IBM SPSS Statistics 20.



1: *Concept of global performance*
Source: improved according Franceschini, Galetto, Maisano, 2007

The data were processed by cluster analysis methods. These methods consist in the fact that the information contained in the multidimensional observations can be classified into several relatively homogeneous clusters (classes). Using appropriate algorithms are able to reveal the structure of the studied set of objects and individual objects classified.

RESULTS

It is obvious from analysis of results that companies usually use for measuring performance and corporate effectiveness different indicators. Based on the analysis of statistical characteristics of the examined group we will present our conclusions as approximate result, which is limited by the resulting reliability. In the results of the paper there are characteristics of research barriers and next research possibilities.

Tab. I includes fundamental data where are obvious that companies use in performance measurement system mainly return indicators, cash-flow indicators and profit indicators. The number of mentioned indicators represents answers of the respondents, where they marked the most used indicators. The conclusions are given by the characteristics of the limits of research and its possible future direction.

Confidence of the research was on 5% level of margin error which represents the potential research gaps.

Based on the analysis of descriptive statistical characteristics of the sample, our conclusions will be presented as an explorative result limited by the resultant reliability. The conclusions provide characteristics of the limitations of our research and its potential further direction. If the value of the Coefficient of variation is under 0.10, it indicates low variability, and arithmetic mean can be considered as typical value of the data file. Other way round, if the value is near to 1.00, it denotes high variability; arithmetic mean cannot be typical value. For this reason, it is appropriate to focus on lower values. The maximum of results of the Coefficient of variation from questionnaire survey is 0,202. That means in all components could be mean accepted as typical value (see Tab. I).

After evaluating basic descriptive statistics of examined objects and evaluating their statistical significance was performed cluster analysis of data. The aim of the cluster analysis is a classification *n* objects, each of which is described *p* characters (in this case, due to the management company) into several homogeneous clusters. We require that objects within clusters were similar as most as possible, while objects from different clusters as least as possible (Budíková, Lerch, Mikoláš, 2005).

Cluster analysis methods can be divided according to objectives that are applicable to the hierarchical and non-hierarchical. In this work we used a hierarchical method, which is based on a variety of other non-empty subsets of a set X, in which the intersection of any two subsets is either one of them, or the empty set, in which there is at least one pair of subsets whose intersection is one of them (Hebák, Hustopecký, 1987). Algorithm of method could be used to describe by those points:

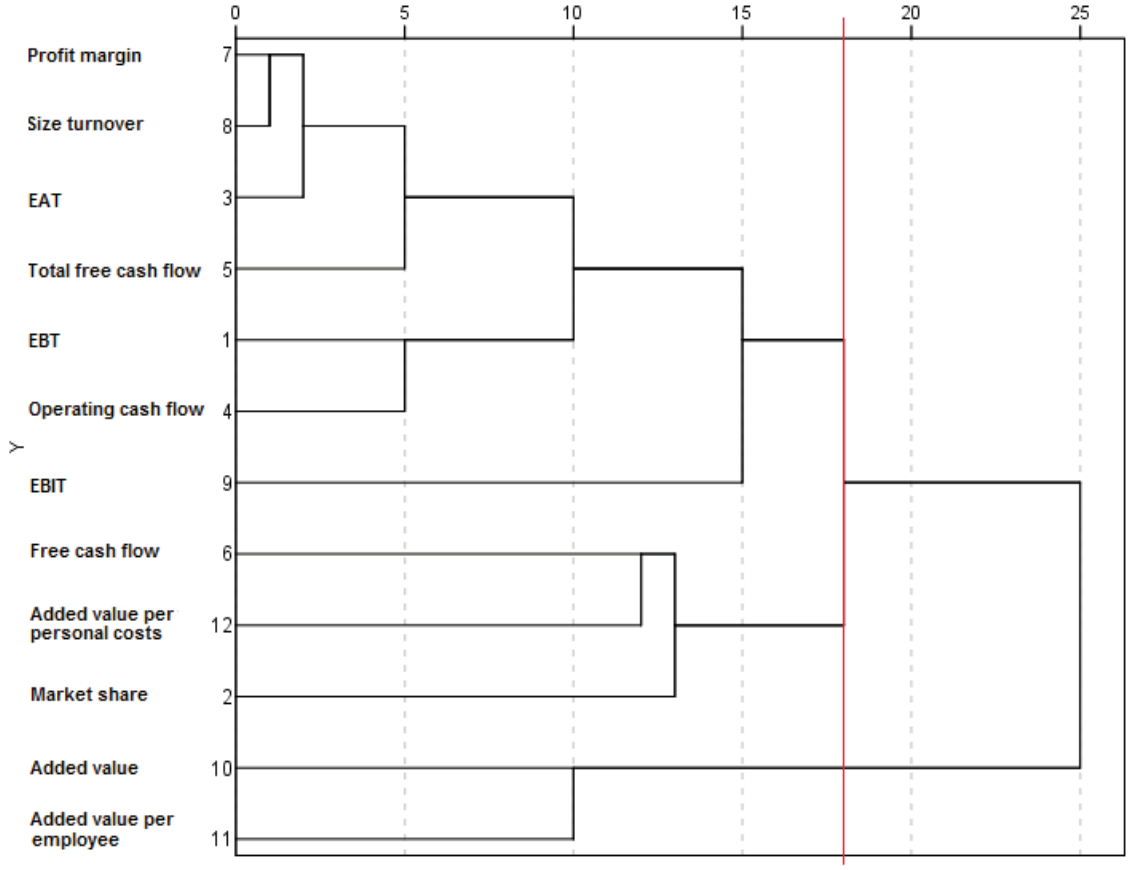
- We compute the matrix D of suitable distance measures.
- The process begin from the decomposition of $S^{(n)}$, i.e. from n clusters, where each contain one object.
- We'll search the matrix D (due to symmetry only the upper or lower triangle), and there we find two clusters (C_i, C_j), which distance $D(C_i, C_j)$ is minimal.
- We combine the two clusters into a new g-cluster. In the matrix D we will delete the i-row and a j-column, and replace them by new row and column for the new cluster (order matrix D was reduced by one).
- We note the order of cycle, identification of linked objects and level for the connection.
- If the process is not finished by merging all objects into one cluster $S^{(1)}$, process continues to step 3.

There are situated connections of all clusters in step four. One of the criteria for this connection could be the furthest neighbour method, which takes maximum possible distances between individual clusters as the criterion for joining clusters. It tends to produce compact clusters.

I: *Basic descriptive statistics*

	EBT	EBIT	EAT	Operating cash flow	Total free cash flow	Free cash flow	Profit margin	Size turnover	Value added	Value added per personal costs	Value added per employee	Market share
Mean	3,61	3,13	3,83	3,43	3,48	2,87	3,52	3,74	3,09	1,91	2,65	2,30
Mode	4	4	4	4	4	4	4	4	4	1	4	1
Median	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	2,00	3,00	2,00
Std. Deviation	,891	1,290	,491	,843	,898	1,359	,665	,541	1,311	1,345	1,496	1,259
Variance	,794	1,664	,241	,711	,806	1,846	,443	,292	1,719	1,810	2,237	1,585
Coefficient of variation	,049	,094	,121	,024	,155	,160	,201	,137	,066	,156	,202	,175

Source: Own work



2: *Tree diagram for 12 variables – complete linkage*
Source: Own work

II: *Cluster membership*

Case	Clusters	
EBT	1	**Profit indicators**
EAT	1	
Operating cash flow	1	
Total free cash flow	1	
Profit margin	1	
Size turnover	1	
Value added	1	
EBIT	2	**Earnings indicators**
Free cash flow	2	
Market share	2	
Value added per personal costs	3	**Value added indicators**
Value added per employee	3	

Source: Own work

From the obtained results can be understood as an extreme result mainly cluster 1 and 3, which include (due to their size) almost whole indicators. In terms of number of cases, cluster 2 is on the edge of acceptability (see Fig. 2). This can be limited by the size and location the sample.

Based on the Tab. II, we epitomized three clusters, which show the groups of indicators that include profit, earnings and value added indicators.

Results of cluster analysis can be verified by using factor analysis, which looks for the hidden factors influencing the monitored variables of data file. The result of factor analysis is to replace the large number of potentially covertly correlated variables by several new (mutually uncorrelated or low correlated) factors.

DISCUSSION

The 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 indicators.

Based on basic statistics were defined many financial indicators that have impact on performance of enterprises (see Tab. I). It is possible to say, if enterprises want to increase their financial performance, it is appropriate to focus on these indicators. The objective of further data processing was the reduction of original broad file of indicators, namely by expert analysis, especially application of multi–dimensional statistical methods. The paper presents the results of cluster analysis.

Having fulfilled the above-mentioned conditions, it is possible to proceed to the creation of a graphical output of the cluster analysis, so-called dendrogram. Dendrograms are usually used to illustrate the results of the agglomerative hierarchic clustering procedure. A dendrogram therefore shows the individual steps of the calculation of cluster analysis. For the purpose of this article dendogram was created by using method of the nearest neighbor method with the Chi-squared measure. In dendogram was chosen cut at a depth of thirteen, which gives a total of three clusters (Řezanková, Húsek, Snášel, 2007).

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 financial indicators in terms of assessing their impact on business management.

There were evaluated three clusters, which are classified into different groups of indicators. This definition of homogeneous groups can be used especially in marketing management, for example when creating marketing strategies for different groups of clusters within clusters where groups are very similar, and vice versa groups from different clusters are similar to a minimum.

Our research showed that there is large space for improvement and that this are continues to offer new and new ways for companies to be competitive in management by companies in the Czech environment. Limitation of this paper is focusing on domestic companies. Therefore it is necessary to do next researches where is possible to use knowledge not only in domestic environment, but especially in international environment to ascertain the influence of corporate performance measurement system.

CONCLUSIONS

The main goal of presented research was to define set of the KPIs in selected area. Based on the performed research we can define three groups of indicators that include especially: profit and earnings indicators, and value added indicators. The correct choice of performance indicators is important part of the corporate strategic process, because well-defined KPIs can help the companies to plan and control their priorities. Companies from Information and Communication Activities should focus their attention especially to profit indicators, earnings indicators and value added indicators, based on our research. Monitoring and constantly evaluating and improving the results of these indicators, should lead to the growth of economic success that is key goal within the chosen strategy for many of them.

The definition of performance indicators is quite difficult because of complexity of measureable areas. Our research and conclusion can help to companies focus on these indicators on the way to improving economic performance.

It is clear, according the research we made and the results, companies are focused only on financial indicators and measurement financial fields instead the combination of financial and non-financial. Clusters, we found, include only financial metrics, but there are necessary to find and use non-financial indicators as e.g. customer satisfaction and loyalty, level of public relations, environmental protection, or level of innovation. These non-financial metrics are important to trace them because due wrong values there is high probability to create disadvantages which weak company on the market.

Not only industrial markets indirectly influence the dynamics of development in many sectors, thereby increasing the impact on the level of unemployment. The main purpose of industrial policy is galvanizing a suitable framework for the development of entrepreneurship and innovation (Šimberová, 2010).

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. Complex assessment of company is much better and more effective than individual performance measurement. The reason for this is mainly the fact that only some of the indicators are directly measurable and comprehensive evaluation is necessary to take into account both indicators long and short term performance.

SUMMARY

The article is focused on the area of economic performance in relation to KPIs. Currently more and more companies use in their management performance measurement that is important not only for the actual management, but also for other interested parties involved in the entity with each other stakeholders. Performance measurement is an important tool for sustainable management. And sustainability is a term that can be more and more often heard from various areas of the Czech environment.

The aim of the article is to present application of theoretical information from the area of Key Performance Indicators (KPIs) connected with the data from primary research. This data were applied by statistical evaluation by cluster analysis. Data for this article were obtained from the project funded by the Grant Agency (Czech Science Foundation), named 'Construction of Methods for Complex Multifactor Assessment of Company Performance in Selected Sector', No. P403/11/2085.

Empirical research deals with cluster analysis. The basic idea and aim of cluster analysis is to find each other, similar cases, and making from them the clusters. On the basis of the paper, there were evaluated three clusters, which are classified into different groups of indicators. The key clusters are: profit indicators, earnings indicators and value added indicators. These clusters we can term the corporate performance system, which are in Czech IT companies important.
If company declares that is efficient and effective, it should be able to demonstrate with indicators, standard or other procedures it used. Companies would not miss comparison with direct competitors in industry area as is shown by current level of knowledge. That is possible with suitably selected indicators, according to using tools, whether financial or non-financial (Milichovský, Solčanský, Sychrová, 2011).

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