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Influential Analysis of Selected Management Tools on Economic Value Added Based on Difference Analysis Method

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Abstract: Presented study deals with an important topic of the strategic management, more than ever recent in changing business environment of last years. There were thoroughly selected and considered 15 broadly recognized management tools (BCG, BSC, EFQM, ISO 9000, ISO 14000, Kaizen, KPI, Lean, MBO, PEST(LE), Porter's five forces, Six Sigma, SMART, SWOT and TQM) and their possible economic impact on appreciated economic indicator Economic Value Added (EVA) was researched. The examined data base counting 677 Czech and Slovak business enterprises was collected by university questionnaire research. Data was categorized and different groups of enterprises were compared regarding their trends in EVA using difference analysis method. The result brought cognition that EVA is mostly positively influenced by Kaizen, Six Sigma, MBO and Lean management tools. Surprisingly, less significant or even negative impact yield quality management systems as EFQM, TQM, ISO 14000 and ISO 9000 series. Results are interpreted, discussed and compared with professional literature.

Key words: Management tools, economic value added, performance, Czech and Slovak enterprises, questionnaire research

INTRODUCTION

The measurement of companies' performance has been investigated in numerous of researches (Irala *et al*., 2006; Naser *et al*., 2004; Shil, 2009; Sim and Koh, 2001; Sirgy, 2002). There exist many management tools which are different in aims, structure and complexity. Surveys have found that many stakeholders are not satisfied with existing measurement tools as there was put too much emphasis on financial measures and too little on the intangible assets which are the real drivers of performance (Balan and Ionita, 2011; Ittner and Larkner, 2001). Anyway, their goal is very common: to foster effective entrepreneurship actions in a changing business environment and bring beneficial economic results. Economic performance can be measured besides others using popular method calculating EVA (Economic Value Added) and the EVA values are expected to be influenced by application of management tools. Reflecting these facts, there were formulated two main research questions:

- Q1: does any management tool influence strongly positively EVA indicator?
- Q2: do quality management tools influence strongly positively EVA indicator?

Theoretical background: Orientation in the management methods is challenging. Some methods are focused only in areas of management work; others are used to achieve the strategic goals of the company. At present, the basis for the success of many companies are higher quality of services, customer care, new ideas, their realization and control. In the regional and global economy environment take place important changes which have to be addressed differently than in the past and these changes are reflected not only in decision making and management of companies but through the whole company parts. Companies are focusing more on existing problems at all levels and in the processes, they apply new and modern management concepts that bring a new dimensions into monitoring of business performance. Most companies review and seek economic benefits and focus its attention to methods of gradual continuous improvement based on cultural traditions originating mainly from Japan.

Prior to assembling the questionnaire research we considered thoroughly what management tools, methods or indicators we should ask about the Czech and Slovak companies to indicate the level of adopting and employment of modern management methods and its influence on the companies' performance.

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Management tools: We were aware that finite, process-able number of methods has to be selected. Finally, there were selected fifteen seemingly incoherent following tools, methods or indicators to input into questionnaire (listed in alphabetical order): BCG, BSC, EFQM, ISO 9000, ISO 14000, Kaizen, KPI, Lean, MBO, PEST(LE), Porter's five forces, Six Sigma, SMART, SWOT and TQM. Equally, the different points of view were taken in account: general familiarity, complexity, specificity, branch of company activity, type of enterprise and more.

BCG matrix (growth-share matrix) is a portfolio planning tool developed by the consulting company Boston Consulting Group (BCG). The BCG matrix is based on the product life cycle and is used for the evaluation of the organization's product portfolio from two points of view: market growth and relative market share. This tool helps managers to determine in which product the company should investigate and which one should avoid or withdraw from the market.

BSC (Balanced Score card) has become the most widely applied performance management system today. It is a system of management and measurement of the performance of the organization which is based on defining a balanced system of interrelated indicators of business performance. It measures performance across a number of different perspectives (financial, internal business process, innovation and learning and customer perspective). Balanced scorecard was developed by American consultants Robert S. Kaplan and David P. Norton in the nineties of the 20th century.

EFQM Excellence Model (also used in short version EFQM Model) was developed by the European Foundation for quality management as a framework for the implementation of quality management methods in the organization. To the process perspective, it comprises several categories of indicators from financial and customers to people and leadership (Ioncica *et al*., 2009).

ISO 9000 family (ISO 9001) is part of a family of international standards issued by the ISO (International Organization for Standardization). Standard ISO 9001 is not a management method, it is standard or norm which serves as a reference model for setting the basic management processes in an organization that continuously helps to improve the quality of provided products or services and customer satisfaction (that's why quality management system). It can be used as a tool for business process and continuous performance improvement.

ISO 14000 family: ISO 14001 is the world's most recognized and used for environmental management systems. This standard requires the organization to identify all environmental impacts and related aspects of its business. In addition, it defines the objectives of environment and introduces measures to improve performance through process improvement in areas of high priority.

Kaizen is a method of gradual improvement based on cultural traditions of Japan. The improvement focuses on the gradual optimizing of the processes and work practices, quality improvement and scrap reducing, material and time savings leading to cost reduction, work safety and reducing workplace accidents.

KPI (Key Performance Indicators) is a term that refers to the performance indicators/metrics associated with the process, service, organizational unit or the entire organization. KPIs reflect the desired performance (quality, efficiency or economy).

Lean (or Lean management) is a very broad management tool. The term philosophy that the organization (enterprise) must accept is most often used in the connection with Lean. Lean is based on several basic principles. Primarily, it is the effort of the organization to continuously improve in all areas and to avoid unnecessary wastage. The second principle is the best possible customer's needs satisfaction no matter how. Lean is often used with different attributes; depending on what fields this philosophy is applied (Baranov *et al*., 2011).

MBO (Management by Objectives) was designed by Peter F. Drucker as a method based on setting and mutual agreement of the objectives and evaluating the success of their achievement. The task implementers are allowed to decide which method is most appropriate to achieve the objective. It is a delegation of responsibility for the objective to the implementer. The method is applicable in virtually all management fields (Vilamova *et al*., 2012).

PEST (LE) analysis is an analytical technique used for the strategic analysis of organizational surroundings. PESTLE (sometimes also PESTEL, SLEPTE, etc.) is an acronym and each letter represents a different type of external factors (political, economic, social, technological, legal and ecological).

Porter's five forces is the research of Michael E. Porter. It is a way of analyzing the industry and its risks. The model works with the five elements (five forces). The principle of this method is a forecasting of the development of the competitive situation in analyzed industry based on the estimate of the potential behavior of the subjects and objects involved in a given market and forecasting of the risk of imminent business.

Six sigma is a complex method of management. It is known more as a philosophy that the company must take. It is one of the TQM approaches initiated by Motorola (further adopted and propagated by GE) where the focus is put on continuous improvement (innovation) of the organization by understanding customer needs using the process analysis and methods standardization in the measurement. It is a comprehensive, flexible management system that is based on understanding customer needs and expectations on disciplined use of information and data to management and decision making. It measures the process capability and stability by determining the rate of DPMO (defects per million opportunities).

SMART is an analytical technique for designing objectives in management and planning. SMART is an acronym from the initial letter of the English names of the objective attributes (specific, measurable, achievable/acceptable, realistic/relevant, time specific/ track-able).

SWOT analysis is an universal analytical technique focusing on the evaluation of internal and external factors affecting the success of an organization or any other evaluated system. Most often, SWOT analysis is used in the strategic management of an organization in the evaluation of a strategic intention. The researcher of SWOT analysis is Albert Humphrey who designed it in the sixties of the 20th century.

TQM (Total Quality Management) is a very complex management approach that puts emphasis on the quality management in all dimensions of the organizational life. It goes beyond quality management. This method ensures mutual co-operation of everyone in a company. It is also a method of strategic management and a management philosophy for all of the organization activities. Associated business processes within this tool force the production to meet and exceed the needs and expectations of company's customers (Kotler and Keller, 2007).

Economic Value Added (EVA): In recent years companies have adopted the main countable aim to maximize shareholders value. Shareholder's wealth is measured in terms of returns they receive on their investment. But, the effort to measure the shareholders wealth is very difficult due to the variability of factors which have significant influence on that. Traditional tools of the company's performance measure (e.g., ROI, ROE, NOPAT) are not able to cover full cost of capital. "The difference between EVA and conventional earnings is significant. An additional assumption is that a firm must generate enough revenues to reward shareholders for their risk exposure" (Griffith, 2004). In last 20 years, academics but also practitioners believe that EVA a better performance measure of value creation on continuous basis than the others.

Sharma and Kumar (2010) states, based on his literature review, the following principles which support the exceptionality of the EVA concept:

- EVA helps in reducing agency conflict and improve decision making
- EVA is more strongly associated with stock return than other measures
- EVA improves stock performance
- EVA adds more informational content in explaining stock returns

The basic idea of the indicator is that a company can reach the profit only if its revenue covers the company's cost and the cost of capital (Young, 1997). EVA is designed to give shareholders better information about the efficiency of managers' decisions that should create the greater company's wealth. The concept of EVA has its roots in the formulation of Marshall (1890) about economic income. Stewart (1991) has taken up the Marshal's idea and developed the performance measure tool.

EVA (Eq. 1) is Net Operating Profit after Taxes (NOPAT) less a capital charge (cost of capital multiplied by the invested capital), the latter being the product of the cost of capital and the economic capital. A positive EVA signifies the value for the shareholders. A negative EVA indicates the loss of the value. The basic formula is:

$$EVA = (r-c)\times K = NOPAT - c\times K \quad (1)$$

Where:

r = NOPAT/K
NOPAT/K = The Return on Invested Capital (ROIC)
c = The Weighted Average Cost of Capital (WACC)
K = The economic capital employed
NOPAT = The Net Operating Profit After Tax with adjustments and translations, generally for the amortization of goodwill, the capitalization of brand advertising and other non-cash items
EVA = Net operating profit after taxes a capital charge

The problem of calculating EVA could be hidden in the way how companies calculate NOPAT and Invested Capital process that requires 164 adjustments (Weaver, 2001).

As some academics (Lovata and Costigan, 2002; Keys *et al*., 2001) point out, EVA has several limitations such as this indicator is too complex, it is only a short-term measure as it doesn't reflect the inflation and other long-term factors, it uncritically prefers risky projects to moderately ones as a tool it can not be used for capital budgeting, it doesn't have incremental value in the predicting or that this is a single performance measure that doesn't take into consideration measures of quality or time. Despite the complicated formula and some limitations EVA is often accepted as the indicator of the managers' performance.

MATERIALS AND METHODS

Questionnaire research was realized during spring semester 2012 by students of Business Entrepreneurship Faculty in Karvina, Silesian University in Opava (Czech Republic). The 722 companies active in Czech and Slovak Republic in time period 2009-2011 were subjects of interest (SMEs are creating 89% of sample group in accordance with number of employees' criterion). Interview protocol included controlled dialogue of a student with an enterprise owner, an executive manager or a top manager, so the collected data have the character of expert guess opinion. Company identification (10 questions) and identification of a student and his opinion on questionnaire relevance (5 questions) was necessary part of each form. Initial sample size 722 companies were filtered and reduced to 677 credible items. The questionnaire form also includes nondisclosure statement to provide business and privacy protection. Moreover, data were analyzed anonymously and published as only no-name data.

Data reliability is assured: by authorization (contact person, signature, stamp) by subjective student relevance evaluation, partially by internet verification and by statistical validity.

There were evaluated following questions/criteria in presented study. Numbering of questions correspond the one used in the questionnaire. Each part had space for possible comment or further narrative information about questions asked.

Enterprise's strategic management: B17: what modern management methods do you know and use? (BCG, BSC, EFQM, ISO 9000, ISO 14000, Kaizen, KPI, Lean, MBO, PEST(LE), Porter's five forces, Six Sigma, SMART, SWOT, TQM and other open question).

Economic progress, crisis and risk management: C12: How did the determined period influence EVA (Economic Added Value)? (Growth>30%, growth up to 30%, stagnation, fall up to 30%, fall>30%).

Data were processed by Microsoft Excel® Software. Table 1 and Fig. 1-4 are presented and commented in the study. Discussion with other published related scientific results is presented later.

Difference analysis is well known intuitive method based on comparison of several (usually two) groups of enterprises and their performance in chosen parameter

Table 1: Influence of selected management tools on EVA indicator

Management tool	EVA influence (%) Increase	Decrease	Total	Classification
Kaizen	30.7	-19.4	50.1	High
Six Sigma	26.9	-22.4	49.3	
MBO	32.1	-12.0	44.1	
Lean	32.1	-6.8	38.9	
PESTLE	25.0	-1.6	26.6	Medium
SMART	19.5	-7.0	26.5	
5 forces	17.5	-6.4	23.9	
BSC	16.1	-4.2	20.3	
BCG	14.9	-2.7	17.7	
KPI	8.7	-1.7	10.4	Low
SWOT	7.3	-1.8	9.1	
ISO 9000	4.3	0.4	3.9	
ISO 14000	4.1	3.3	0.8	
TQM	4.8	6.3	-1.5	Negative
EFQM	12.5	20.2	-7.7	

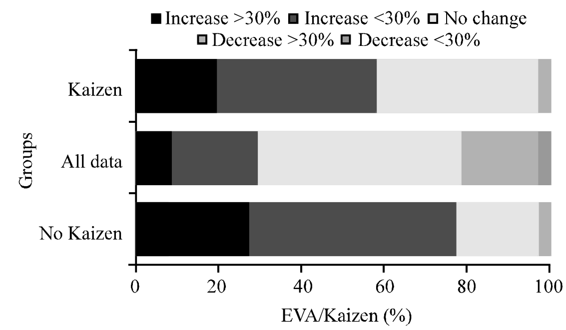

Fig. 1: Influence of Kaizen on EVA indicator (Own processing)

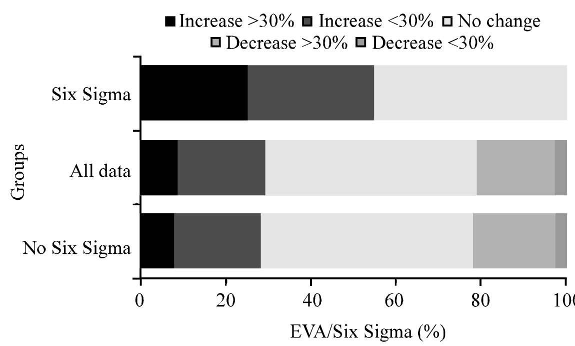

Fig. 2: Influence of Six Sigma on EVA indicator (Own processing)

(Navratilova and Pawliczek, 2014). The groups are different in application or usage of particular management method. Even the groups of enterprises have mostly not the same size; they can be compared because the numbers are recalculated to percentage and normalized. Than easily can be compared and identified which group of enterprises have better performance and how big is the possible influence of particular management tool.

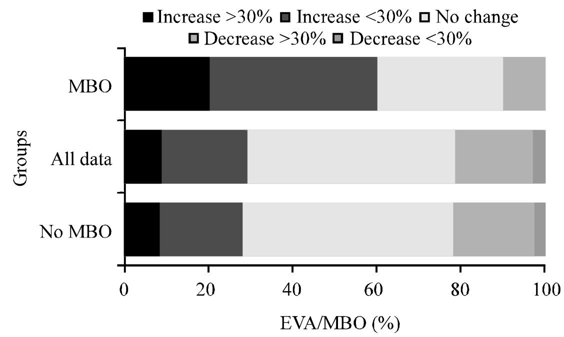

Fig. 3: Influence of MBO on EVA indicator (Own processing)

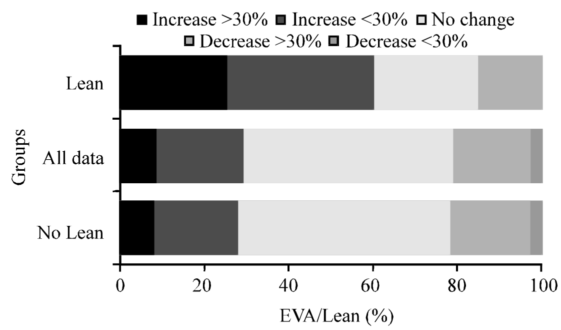

Fig. 4: Influence of Lean on EVA indicator (Own processing)

From the geographical point of view 89.1% of all firms group are settled in the Czech Republic; 10.9% (74 enterprises) are in the Slovak Republic. The 63.5% are from Moravia-Silesia region, at the same time 19.1% are from Ostrava capital city of Moravia-Silesia region, 8.4% are from Karvina seat of School of Business Administration; 5.0% questioned enterprises are from Prague, capital of the Czech Republic. Overall 79.6% of enterprises are from Moravia regions and 9.5% from Bohemia regions including Prague. Concerning structure of economic activity branches according to NACE-CZ industry classification can be stated that almost a quarter (24%) of questioned enterprises were active in section C-manufacturing. Than very closely with 23% the section G-wholesale and retail trade; repair of motor vehicles and motorcycles is covered. On third place is the section F-construction (13%). No other sections exceed 7% and all other sections together create 40% of all firms group.

RESULTS AND DISCUSSION

The paragraphs present most important findings of performed research. There is Table 1 that show calculated influence percentages of all 15 selected management tools on EVA indicator. Further, Fig. 1-4 are belt-charts visually characterizing differences in EVA performance of enterprise's groups who use particular management tool vs. enterprises who don't use it. Charts were constructed only for management tools with high EVA influence. Later, discussion can be found and main conclusions including answers to set research question.

Table 1 depicts calculated percentage values of difference in EVA performance. There were compared percentages of enterprises indicating increase of EVA up to and over 30% in group applying particular tool with group not applying it. The subtracted values can be found in column "increase". There were compared percentages of enterprises indicating decrease of EVA up to and over 30% in group applying particular tool with group not applying it. The subtracted values can be found in column "decrease". Total influence is than "increase" minus "decrease" values. Total value can be interpreted as number expressing how many percent of enterprises with embraced particular management tool have better EVA performance than enterprises refusing particular management tool. Last column matches verbal classification of selected management tools according their possible influence on EVA performance to high (over 30%), medium (15-30%), low (0-15%) and negative (under 0%).

Figure 1 visually characterizes differences in EVA performance of enterprise's groups who apply Kaizen system vs. enterprises who don't use it. It can be clearly seen that the group of enterprises who apply Kaizen and indicated increase of EVA is 30.7% bigger than the group of enterprises that Kaizen do not apply and indicated increase of EVA too. Father can be seen that the group of enterprises who apply Kaizen and indicated decrease of EVA is 19.4% smaller than the group of enterprises that Kaizen do not apply and indicated decrease of EVA too. The calculated total influence value of Kaizen system application is than 50.1% more enterprises with better results than enterprises with no embraced Kaizen and the influence can be classified as high.

This proves the results of the research undertaken by Bahri *et al.* (2011) in the United Kingdom and also the results of the Japanese researcher Massaki Imai who mentions the fact that the implementation of the "gemba kaizen" method in company leads to an improvement in entrepreneurial activities such as higher productivity and labor quality (Imai, 1997).

Figure 2 visually characterizes differences in EVA performance of enterprise's groups who apply Six Sigma system vs. enterprises who don't use it. It can be clearly seen that the group of enterprises who apply Six Sigma and indicated increase of EVA is 26.9% bigger than the group of enterprises that Six Sigma do not apply and indicated increase of EVA too. Father can be seen that the group of enterprises who apply Six Sigma and indicated decrease of EVA is 22.4% smaller than the group of enterprises that Six Sigma do not apply and indicated decrease of EVA too. The calculated total influence value of Six Sigma system application is than 49.3% more enterprises with better results than enterprises with no embraced Six Sigma and the influence can be classified as high. The research conclusions of the British researchers Kumar *et al.* (2009) prove that also the management of SMEs in the UK see this company management tool as very significant.

Figure 3 visually characterizes differences in EVA performance of enterprise's groups who apply MBO system vs. enterprises who don't use it. It can be clearly seen that the group of enterprises who apply MBO and indicated increase of EVA is 32.1% bigger than the group of enterprises that MBO do not apply and indicated increase of EVA too. Father can be seen that the group of enterprises who apply MBO and indicated decrease of EVA is 12.0% smaller than the group of enterprises that MBO do not apply and indicated decrease of EVA too. The calculated total influence value of MBO System application is than 44.1% more enterprises with better results than enterprises with no embraced MBO and the influence can be classified as high.

Figure 4 visually characterizes differences in EVA performance of enterprise's groups who apply Lean system vs. enterprises who don't use it. It can be clearly seen that the group of enterprises who apply Lean and indicated increase of EVA is 32.1% bigger than the group of enterprises that Lean do not apply and indicated increase of EVA too. Father can be seen that the group of enterprises who apply Lean and indicated decrease of EVA is 6.8% smaller than the group of enterprises that Lean do not apply and indicated decrease of EVA too. The calculated total influence value of Lean system application is than 38.9% more enterprises with better results than enterprises with no embraced Lean and the influence can be classified as high.

The upper findings lead to interesting results: Apparently some management tools strongly positively influence EVA indicator performance, what is an answer to research question Q1. These tools or system are Kaizen, Six Sigma, MBO and Lean. Not all quality management tools however influence EVA indicator strongly positively answer to research question Q2. Although Kaizen, Six Sigma and Lean can be considered as quality management system influencing EVA performance strongly positively, there is very interesting opposite side of Table 1. ISO 9000 and 14000 series influence on EVA performance is only low and TQM and EFQM influence is even negative. We try later to discuss and explain this phenomena.

CONCLUSION

As confirmed by the results of the research, active knowledge and awareness of modern methods of company management is currently at an eager place. The importance of Japanese methods is currently growing and has influence on the thinking and behavior of business people in the Czech and Slovak Republic. The advantage of Japanese methods is in creation of a corporate culture based on long-term philosophy, addressing the roots of causes and emphasizing on product quality and the idea of continuous improvement, utilizing the involvement of all employees and immediate betterment without heavy capital investments. The economic benefits of Japanese methods are very difficult to quantify, since many proposals have not only non-financial (e.g., improve working conditions) but also financial (e.g., cash or buildings) character and each proposed measure should always ensure financial savings eliminate or at least reduce unnecessary costs. Sometimes, it is not possible to quantify each realized design or change separately but the priority should be monitoring of indicators such as sales, cash flow or earnings. The key procedures and processes of successful companies in Europe but also in the whole world is not only cost reduction affecting indicator EVA but also to prepare companies for the future cooperation, cohesion and solidarity within the company, the development of human potential and talents, innovation and business management.

RECOMMENDATIONS

Management methods (Gondhalekar *et al*., 1995; EFQM 2012; Zink, 1994) referred to as "Western approach": TQM, EFQM and ISO 9001 certification confirmed in the questionnaire research that they became commonplace and standard support system and method of mutual cooperation in supplier-customer relationships of the companies. In the current market, environment can not be recommended or compulsorily charged control method that would suit most companies because each company prefers to use a particular methods or systems. Their use, modification and adaptation to the specific purpose decide particular company management.

To understand better and explain the relation between the tools concerning on quality issues and lower level of EVA could help the research of Pivka (2004), Ismail and Hashmi (1999), McAdam (1999) and Wilson (1999) who focus on the quality certificates auditing.

Pivka points out the failing of the compliance auditing system. He states that a certain period after obtaining certification (4 of 5 years) the companies pass over to a routine treatment and are not forced to strive for the greater efficiency or competitiveness. The value-added of the compliance audits as well as the savings are then larger before obtaining the ISO certificate than after. Pivka suggests combining ISO compliance auditing with the management audit, e.g., ones the company's return on capital is negative, it indicates the necessity to examine what needs to be divested. Without other value-added auditing tools the companies tend to the only formal fulfillment of ISO standard requirements instead of setting higher business goals and their realization. EVA could be such a tool as it stresses the importance of improvement.

The aim and contribution of the research was to present information about current management practices and their impact on the EVA indicator in the sample of (mostly) SMEs in the Czech and Slovak Republic to help companies' managers identify the tools and resources to improve the economic performance of the companies and point the importance of using modern methods of management decision. As is clear from the research, most commonly used Japanese methods in both countries include Kaizen, Six Sigma and Lean production (and Drucker's MBO Method). This trend is currently significant for high-quality enterprise management as well as for short and long-term cost control in an enterprise. Many of approached SMEs understand the fact that the knowledge and implementation of modern management methods is vital. Results of worldwide research Bahri *et al.* (2011) and Kumar *et al.* (2009) suggest that enterprises see the Japanese management methods as positive and the results measured by EVA are a useful tool for performance management in small and medium-sized enterprises. This research stands in opposition to the research conducted by the Association of SMEs of the Czech Republic. This survey suggests that only 22.5% of the respondents know anyone of the modern management methods. The difference of both these pieces of research can be seen in the selection, amount and size of the approached enterprises and the researched market.

As some of researchers (Irala *et al.*, 2006) point out when managers know that they are assessed by EVA, they could tend to increase the value of this indicator by one of the following arrangements:

- Improving returns with the existing capital
- Increasing operating profits without increasing capital
- Employing capital productively
- Reducing the capital cost

Existing and new companies applying Japanese management techniques should consistently continue what has been started coordination of processes or actions to achieve the target conditions, the development and implementation of the proposed measures and also focus on monitoring of selected factors that have a demonstrable effect on the financial performance of the company.

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