

Key Performance Indicators and the Balanced Scorecard Approach in Small and Medium-Sized Enterprises: A Literature Review

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Abstract

Purpose of the article The aim of this article is to identify possible approaches for define key performance indicators and possibilities of use balanced scorecard to this extend in small and medium-sized enterprises (SMEs).

Methodology/methods Comparison of the views of authors with the performance measurement in companies using key performance indicators, balanced scorecard and their combination with other approaches. This literature review is intended to find gaps of the studies in this area, which can lead to future research. Secondary research is used publishers such as Elsevier, Emerald, Springer and other. This literature review is actual for present year, because the level of knowledge in this area will change and expand in the future. For this reason, the main focus is on time period between 2014–2019.

Scientific aim Define performance measurement approaches based on key performance indicators and balanced scorecard and identifying knowledge gaps in this area.

Findings The results show that key performance indicators are suitable for measuring performance in companies and they are very often used with combination of fuzzy methods or Enterprise Analysis Model. But one of the most common ways is to implement key performance indicators (KPIs) depending on balanced scorecard (BSC). The gap in knowledge has been identified in the implementation of these procedures in SMEs, mainly in non-productive enterprises.

Conclusions These approaches are very suitable for measuring company performance and have sufficient evidence ability. The limitation lies in the fact that these methods requires profound knowledge of this issue and implementation is long and demanding. SMEs often lacking the necessary finances or knowledge of how implement this approach. Because of this reason, the founded gap is unforgettable problem, and it is necessary that future research be focused on this topic.

Keywords: key performance indicators, balanced scorecard, small and medium sized enterprises, performance measurement, company performance

JEL Classification: M15, M21

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Introduction

In today's fast-paced time, the economy is struggling with many changes. The turbulent environment requires increasingly diversified products and increased quality requirements, faster production processes, innovative thinking and new technologies. The basic building block and the primary concern of every business is profit and a satisfied customer. Businesses must respond quickly to changes in the economic environment while maintaining their level and competitive advantage, with the most efficient use of all resources at the lowest possible costs. Now at this point it is necessary to use the area of performance management, which deals with control of company's key processes. Nowadays, every business knows that they need to plan, manage, and continually improve their performance.

Key performance indicators as a part of performance management are one of the most up-to-date and most discussed business management issues. What key indicators are, how they are defined and developed, and a general framework for their implementation, is described, for example, by David Parmenter in his "Key performance indicators" (Parmenter, 2015). However, their applications and use still have many gaps. Most of the studies focused on this topic are dedicated to large, medium-sized and small manufacturing companies in the automotive, energy or healthcare sectors. However, medium and small non-manufacturing companies are almost forgotten. At the same time, small and medium-sized enterprises are a very important part of the whole economy, especially because they can respond more flexibly to changes in the economy because of capital limitations because they are not limited by large investment property. Their survive is also dependent on higher innovation creativity, more room for individual initiative and less restrictive organizational conditions. Managers of these companies are more intimate and more involved in innovation (Křivková, 2011).

This article is focused on level of knowledge in application key performance indicators, balanced scorecard and other methods belong to performance management to small and medium-sized enterprises and finding gap in this area.

The outputs of this article will be used as a literary research for dissertation work, which will be focused to design a comprehensive system of key performance indicators based by the balanced scorecard to testify for the fulfilment of strategic goals in the company. The dissertation will be aimed on the automotive industry, namely car dealers, not manufacturing companies, but primarily on the service companies.

1 Methodology

The subsequent chapter describes the research process of an evidence-based systematic review strategy. This research was backed by two books that are related to the subject of key performance indicators and the Balanced Scorecard approach. First book is "Key performance indicators: Developing, Implementing and Using Winning KPIs" from David Parmenter (2015) and second book is "Balanced Scorecard v praxi" from Horváth & Partners (2002). These books provide a general framework that extends and deepens the knowledge of the examined topic.

The research was limited to articles from key peer-reviewed journals that publish most of the research related to economy and papers from conferences, which were published in proceedings. The journals and proceedings included in the search are: Future Computing and Informatics Journal, Environment Systems and Decisions, Journal of Cleaner Production, Management Science Letters, Economics & Sociology, Applied Mathematical Modelling, Evaluation and Program Planning, Procedia Manufacturing, Procedia – Social and Behavioral Sciences, Procedia Economics and Finance, and Procedia CIRP.

The search was restricted to the period from the beginning of 2014 through the presence of 2019. Research in the field of key performance indicators and the Balanced Scorecard approach was very rich and discussions and researches are still rising. Each author grasps the subject matter in a different way, so there is a great variety of views. They use different statistical measurements, mathematical methods and techniques.

The search was performed in the database Proquest Central, which provides information for more than 160 disciplines including business and economics or science and technology, in the database Business Source Complete (EBSCO), which provides full-text periodicals, reviewed periodicals, news and conference proceedings and much more, and in the citation database Web of Science, which includes both monitoring of citations of scientific papers, both regularly updated bibliographic information.

The search was performed combining the following keywords either in the title or in the abstract: ("key performance indicators") OR ("performance indicators") OR ("performance measurement") OR ("company

performance”) AND (“small and medium-sized enterprises”) OR (“SMEs”) OR (“small and medium-sized businesses”) AND (“balanced scorecard”). The relevance of the articles was ensured by reading all abstract and checking for a discussion related to the goals of future research.

Finally, 17 articles were chosen which seemed to be most relevant for the researched issue and future use in the upcoming research.

2 Balanced Scorecard

Kaplan and Norton presented the Balanced Scorecard as a model that provides executives with a comprehensive framework that can translate company’s vision and strategy into a coherent and linked set of performance measures (Kaplan & Norton, 1996 quote by Ivanov, Avasilcǎi, 2014).

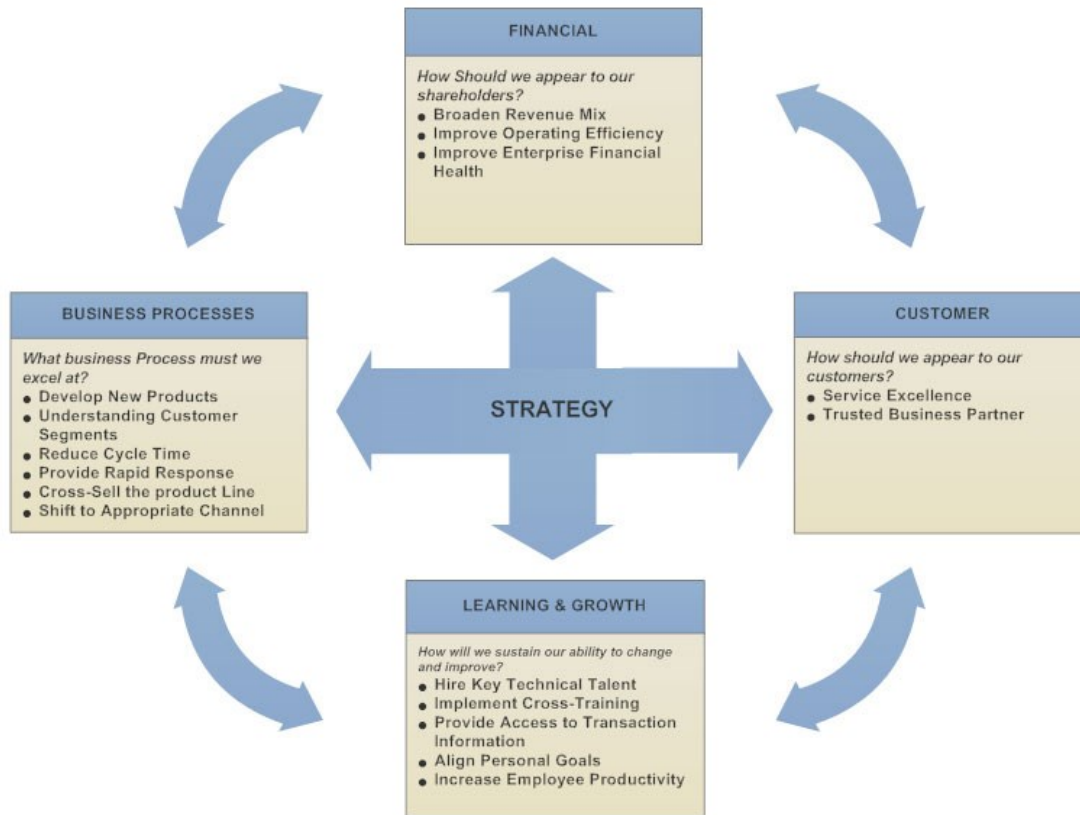
2.1 Theoretical framework

Shafiee at al say that the strongest point of BSC is its ability to illustrate the cause and effect relations between strategies and processes through the BSC’s perspective (Shafiee, Lotfi, Saleh, 2014). It’s true, because the Balanced Scorecard have four perspectives, which map a company from all angles and provide a comprehensive overview of all the necessary frameworks that the company should monitor. The Balanced Scorecard is one of the best-known of performance assessment framework. It’s one of the most modern tools that meet the criteria established for the strategy concept of company performance evaluation (Kádárová et al, 2014).

Horváth & Partners present four perspectives of the Balanced Scorecard (Horváth & Partners, 2002, p.10, Ivanov, Avasilcǎi, 2014):

- 1) Financial perspective: This perspective is focused on financial metrics in organization. It’s very important to know where to get money and how invest them. Company should to follow wishes their investors and still monitor state and development their financial metrics.
- 2) Customer perspective: This perspective points to importance to meet goals company’s customers. Satisfied customer is main goal every company, because leads to meeting the financial goals.
- 3) Internal business perspective: For meeting financial and customers goals is very important to appropriate setting internal processes. Monitoring of internal processes help to company to identify and removal problems in functioning of organization.
- 4) Learning and growth perspective: This perspective help company mark and exploit possible opportunities, which exist on the market. Company also must use employees and their knowledge, skills and abilities.

Four perspectives, strategy and vision of company like as a basic frame of whole approach (Figure 1).



Adapted from the Balanced Scorecard by Robert S. Kaplan and Dave P. Norton. Harvard Business School Press, 1996.

Source: Smartdraw, 2019

Figure 1 Four perspectives of Balanced Scorecard

2.2 Approaches of articles

Many studies are focused on this perspective, but every study has different viewing angle. Because of that implementing the Balanced Scorecard into company is very difficult process, which can't cover every specific process or property, is this approach very often complement with different methods.

Study, which is focused on Innovative Integrated BSC presented that the Balanced Scorecard is now defined as a 4th Generation and say, that it's sophisticated approach, which prepare strategy for behavioral change and creating rich informed discussions about performance. They claim, that the BSC haven't a mathematical model and because of that they try integrate BSC with Data Envelopment Analysis (DEA) on a practical level. DEA is approach for evaluating the efficiency of Decision Making Units, which converts multiple inputs into multiple outputs. DEA used to measure technical efficiency (Kádárová et al, 2014).

Shafiee at al. (2014) is attempt focusing on evaluation of supply chain performance, because they say that it's one of the most complicated decision making problems. They will use four perspectives of BSC approach and combine this approach with the Decision making trial and evaluation laboratory (DEMATEL) for obtain a network structure and this structure is use for create DEA model. They say that it not possible to calculate the efficiency evaluation score by BSC. For this reason, they complement BSC approach with DEA. This approach was applied in the Iranian food industry and was successful.

Kádárová, Durkáčová and Kalafusová (2014) deal with modification of BSC. Their approach mentioned gap in the research by combining BSC, knowledge-based system (KBS) and analytic hierarchy process (AHP) method and try to fill it up. They submit a proposal on creating the Balanced Scorecard Knowledge-based System where comprises three main components of Decision Support Systems (DSSs) including Database management system, Model-base management system and Dialog generation and management system. This database includes current

or historical data, financial or non-financial information, and expert questionnaires from multiple applications or units.

Lesáková and Dubcová (2016) provide the primary research focused on detecting the current state of the knowledge and use of the Balanced Scorecard method in businesses in the Slovak Republic. Their result confirmed a presumption that not only the utilization but also the knowledge about the Balanced Scorecard method is very low in Slovak businesses. It's very likely that results of the same research carried out in the Czech Republic would be similar.

3 Key performance indicators

Key performance indicators are a discovery and well-explored way of managing enterprise performance.

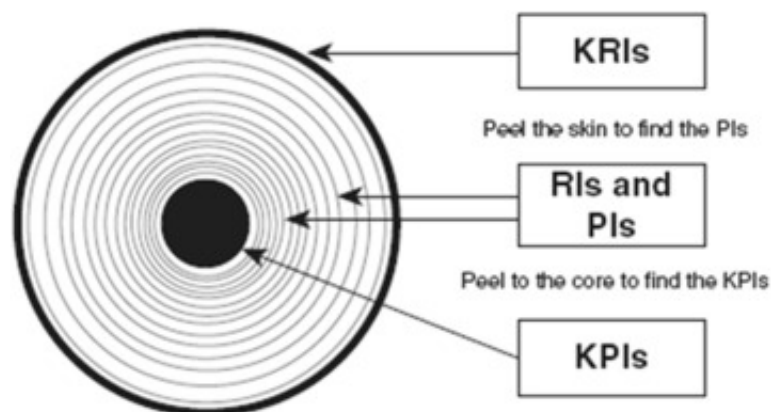
3.1 Theoretical framework

Today, the KPIs are commonly used as a tool for measuring business performance. Their introduction is linked to the organization's vision and strategic management of a business where, according to various approaches (e.g. a balanced scorecard), business management areas are defined and divided into categories that need to be tracked and measured. In these categories, the key performance indicators are then correctly selected.

Parmenter from extensive analysis and from discussions define seven characteristic of key performance indicators.

- 1) Non financial: Despite many different opinions, he is adamant in that all KPIs are nonfinancial.
- 2) Timely: KPIs should be monitored for 24 hours and seven days at week therefore, continuously.
- 3) CEO focus: All KPIs make a difference; they have the CEO's constant attention due to daily calls to the relevant staff.
- 4) Simple: All staff understand the measure and what corrective action is required.
- 5) Team based: Responsibility can be tied down to a team or a cluster of teams who work closely together.
- 6) Significant impact: Major impact on the organization (e.g., it impacts on more than one of top critical success factors and more than one balanced scorecard perspective).
- 7) Limited dark side: They encourage appropriate action. Before becoming KPI, a performance measure needs to be tested to ensure that it creates the desired behavioral outcome (Parmenter, 2015, p. 11-13).

There are four types of performance measures (Figure 2). Key result indicators (KRIs), which tells you how you have achieved in a perspective or critical success factor. Second are performance indicators (PIs), which tell you what must to do. Result indicators (RIs), which tell you what you have done and the last of them are KPIs, which tell you what to do to highly increase performance (Badawy et al, 2016).



Source: Badawy et al, 2016

Figure 2 Four types of performance measures

Kelvin has defined key performance indicators as "When you can measure what are speaking about and measure it in numbers, you know something about it, when you cannot express it in numbers, your knowledge is of meagre and unsatisfactory kind; it may be the beginning of knowledge but you have scarcely, in your thoughts advanced to the stage of science" (Lord Kelvin, 1870 quoted by Kaganski et al, 2017). On the other hand, Badawy et al say that many companies are working with the wrong measures, many of which are incorrectly named KPIs. Very few companies really monitor their true KPIs. That is because only few organizations, business and leaders have explored and knew what a KPI actually is (Badawy et al, 2016). Kaganski et al, in their other study add that other restriction of usage of KPIs is that it cannot be utilized in simple way to improve targets due to the fact, that each independent indicator needs to be faced to some benchmark value without concerning the remaining aspect of the company's activities, which are not related to that metric and argue that the KPIs can have a negative impact on the creativity by establishing restrictions and constraints when dealing with different issues (Kaganski, Majak, Karjust, 2018).

3.2 Approaches of articles

Pavelková et al create the study from macroeconomic point of view, which is based on the samples of original equipment manufacturers and suppliers in Czech automotive sector. Their study shows how the value-based measure represented by Economic Value Added and its pyramidal breakdown could act as facilitators in revealing value drivers. They used sensitivity analysis and the Stochastic Frontier Analysis. These analysis are based on to identify the key performance indicators. They identify how businesses react and how they are affected by the pre-crisis, crisis and post-crisis period. Their divisions divide businesses by size and their research proves that small and medium-sized enterprises are more sensitive on the changes in economy, but denies greater return of resources in these companies (Pavelková et al, 2018).

Badawi et al demonstrates different approaches for exploring key performance indicators in different directions including manual, selection, or prediction approaches supported by a theoretical framework (Badawy et al, 2016).

Hsu et al in their study identify the key performance indicators utilizes quality function deployment (QFD) approach as the basic structure in which combines with fuzzy Delphi method (FDM), modified fuzzy extent analytic hierarchy process (FEAHP) and technique for order preference by similarity to an ideal solutions (TOPSIS) method to prioritize the key performance indicators. This study is focused on small and medium-sized enterprises and their sustainability development. They say that SMEs should effectively utilize their limited resources and prioritize their performance indicators in terms of balanced scorecard approach in elaborating their sustainability development (Hsu, Chang, Luo, 2017).

Banu focuses its research on innovative SMEs. She says that when undertaking innovation, developing KPIs represents an important tool for insuring that all process objectives are met. Her study represents to establish the main requirements for developing meaningful KPIs in order to effectively measure innovation, referred to as NANOAPPARATUS. This research was implement on innovative SMEs from Romania and identified a generic methodology for developing meaningful KPIs (Banu, 2017).

Kaganski et al say that the key performance indicators are known as a powerful tool, which would provide valuable information regarding bottlenecks and weak spots in companies. They are focused on the KPIs in two studies. First, they implement the KPIs selection model as a part of the Enterprise Analysis Model, which is represented by the questionnaire for employees (number of questions and the weight of the answers depends on the employee position and the "credibility index"). The questionnaire also includes double questions that track the depth of understanding of problem. According to individual weights and indexes, the major issues in the company are evaluated and subsequently assigned to the thirteen KPIs that are designed to respect the SMARTER approach (Kaganski, Majak, Karjust, Toompalu, 2017). Follow study is based on the same thirteen KPIs respected the SMARTER approach in SMEs, but with utilize the fuzzy analytical hierarchy process. Kaganski et al calculated the KPIs weights, so how much the individual indicators meet the requirements of company's goals. Calculating is provided by the fuzzy logics. This model helps to reduce time for analysis of the company, make processes more understandable and transparent and is usable for SMEs in different industries (Kaganski, Majak, Karjust, 2018).

Collins et al describe a method for suggesting improvements to a manufacturers' KPIs, based on the results achieved from a workshop to score the KPI on a number of predefined criteria. They argued that not all KPIs are properly aligned because developing KPIs is a non-trivial task that requires a deep understanding of the businesses or operation to be done correctly, It is estimated that 70 % of performance measurement systems fail after

implementation. The authors applied the developer approach to two workshop outputs, each from independent manufacturers, and the results highlighted the significant difference between the two manufacturers in terms of improvement priorities and KPI assessment (Collins et al, 2016).

Chaharsooghi et al concerned with identifying the key performance indicators in e-commerce and determining the casual correlations among the indicators of different perspectives of the balanced scorecard in Iran. They say that applying the balanced scorecard method to identify and analyze the key performance indicators in e-commerce and virtual stores is one of the new aspects. They combine balanced scorecard and DEMATEL model. The results show that the managers should concentrate on their internal standard operating procedures in this area (Chaharsooghi et al, 2016).

Slightly different view of key performance indicators provides a study from Bobitan Roxana-Ioana, which is focused on KPIs disclosure by the Integrating reporting. This study is based on Philips Annual Report published for year 2014. Author says that institutional and small investors, financial analysts and other key stakeholders are demanding more information about long-term strategies and profitability of companies. The companies must change the way these KPIs are being incorporated throughout the annual report and how these are linked to the company's strategy and business model, their risk mitigation, and their incentive schemes. She describes which are the most important key performance indicators in spirit of integrating reporting. The results show that an integrated report should contain qualitative and quantitative reporting about how they performance leads to value creation and argue that the integrated reporting is the management tool for KPIs (Bobitan, 2016).

Articles focusing on this topic, whether macroeconomic or microeconomic, mostly combine the selection of key performance indicators with a performance management technique to prioritize these key indicators and thus give a clear message to the company that is most important to focus on. Selection, implementation and tracking of KPIs is a long-term issue that is constantly needed to measure and improve. Therefore, it is a tool of strategic management and long-term prediction of the future of the whole company.

4 Identify key performance indicators by the balanced scorecard

Some articles are older than searching concept, but their representation of the topic is very important. For this reason, older articles are worth mentioning.

4.1 Theoretical framework

To track KPIs, many companies use a Balanced Scorecard. The whole concept of key performance indicators and a balanced scorecard is to align workers' performance with the long-term strategic objectives of the company. After that company identify its vision and translating its into the strategy, company must identify targets which represented the strategy. These targets are measured by KPIs (Pacific Crest Group, 2018).

4.2 Approaches of articles

Wu implement the key performance indicators into a strategy map of the balanced scorecard for banking institutions. For the identify relationships between KPIs used the DEMATEL method. Strategy maps express casual relationships in a sequence. The chain of cause-and-effect connect all the key performance indicators through the four perspectives of BSC, which reflect dynamically the change of strategies and indicate how an organization creates its value. Key performance indicators are divided into four perspectives of BSC. The study was contributed to providing decision makers with a systematic approach for establishing a visual strategy map with a consideration of the intricate casual relationships among KPIs along with in-depth analyses of important strategic improvement paths. Author was successful in creating this system and its utilize for many organizations in different industries (Wu, 2012).

Chaharsooghi et al used the DEMATEL technique and calculated the arithmetic average of the experts' response to summarize their opinions and from this create direct and indirect correlation matrix of the key performance indicators for each perspective of BSC. They say that in this method through one of ways of creating idea in the experts, the brainstorming, the Delphi or a conference, a list of available and effective factors and criteria of the issue, should be extracted according to view of the group of participating experts (Chaharsooghi et al, 2016).

Hsu et al combine compilation of sustainable development criteria and compilation of performance indicators (based on the perspectives of BSC). Firstly, they used the fuzzy Delphi method to select important sustainable development criteria and performance indicators. Secondly, they used a modified fuzzy extent analytical hierarchy

process (FEAHP) to evaluate the weighted importance of sustainable development criteria, and the fuzzy theory measures the correlations among the performance indicators and their relationships. Finally, they used the TOPSIS for prioritization of KPIs. This study was applied to manufacturing SMEs on Taiwan, which helps create a sustainable KPI Framework with a view to improving performance (Hsu et al, 2017).

5 Future research

The state of scientific knowledge in this topic illustrates the very frequent use of key performance indicators in line with the implementation of balanced scorecard. A huge gap in this theme are non-production businesses. However, a single study has not been focused in recent years to aim on the performance measurement and the setting of key performance indicators in non-production sphere and processes. Performance measurement in non-manufacturing enterprises is just as important as in the manufacturing sphere. In a better case, non-production SMEs are themselves looking for performance management capabilities and apply already-used methods in manufacturing processes to non-productive processes, but in the worst case, and these are the overwhelming majority, these companies do not consider it important to measure, standardize or even improve their processes. And just neglecting the importance of these processes leads to a decline in performance, productivity and reduced customers satisfaction. This statement demonstrates the research conducted in SMEs in the Slovak Republic (Lesáková, Dubcová, 2016).

The literature review has found that the area of performance management, namely the KPIs and the BSC, is a topic in which new researches and combinations of different methods are being carried out. However, the gap in this area remains not only of non-productive SMEs, but also of the Czech Republic, which in recent years has no researches in this area expect the already mentioned macroeconomic perspective based on the KPIs and EVA.

The results will be used in a dissertation work. Secondary research will be conducted using the Amadeus database and primary research will take the form of a questionnaire to be send to the surveyed sample of respondents. From primary research, it will be possible to identify the key critical factors for business success. Each of these critical success factors will have to comply with SMART principle. This means that for each of these factors a probability estimate will be created and justified to what extent and why individual identifiers meet the separate criteria of this principle. The final system of proposed key performance indicators will be further broken down to the requirements of the balanced scorecard into individual quadrants, and the measurement and tracking methods for each quadrant and key performance indicators will be set. However, introducing a balanced scorecard is a very difficult task in every business, so only some parts and useful steps of this matrix will be used to link the performance key performance system. Therefore, it will be precisely decided how and how much the implementation of the balanced scorecard will take place in the KPI system. Finally, the method of tracking and measuring individual elements in the system will be selected. The ultimate output of the research will be a system of KPIs based on the balanced scorecard approach, which should be applicable in practice to the monitored enterprises. In the end, the system will be virtually implemented in one of the monitored companies and a retrospective evaluation of the whole system will be carried out.

6 Discussion

Performance management is very important tool for control company's processes. It is essential for the company to continually manage and monitor its processes and to seek continual improvement as today's economy requires.

In an ideal world, every business would monitor its performance in the same way, publishing key performance indicators and the extent to which it meets its goals and strategies. There would be a general performance management framework applicable to all businesses. However, this is not possible in the world of imperfect competition, market externalities and crisis.

The fact that the proposed system works in one industry does not mean that it will work in another industry or even in another country. Each industry is unique it its own way, and it is therefore necessary to devote in depth and thorough performance management, especially for each industry and country.

Conclusion

This article is focused on a literature review of key performance indicators, balanced scorecard and their combinations with other methods and approaches of performance management in small and medium-sized enterprises. Overview of articles and their methods (Table 1) shows that performance management is a discussed

theme, which is progressively monitored and implemented in different industries and countries. Articles are from Romania, Estonia, Egypt or USA. Research was also conducted in the Slovak Republic (Kádárová et al, 2014; Lesáková, Dubcová, 2016), but from the Czech Republic is only one paper focused on a macroeconomic point of view (Pavelková et al, 2018).

Table 1 Overview of articles

Articles and their combination of methods	Number of articles
Found in total	16
BSC/ DEA/ DEMATEL	2
BSC only	2
BSC in total	4
KPI/ EVA	1
KPI/ FUZZY methods	3
KPI/ DEMATEL	1
KPI only or other	4
KPI in total	9
KPI/ BSC	3

Source: A literature review – own summarization, 2019

Only five from sixteen founded articles are focused on small and medium-sized enterprises.

Even though small and medium-sized enterprises are important to maintain economic growth. For SMEs, the adoption of advanced managerial practices in the main business processes is a key to the successful improvement of their business performance and competitiveness. According to the position of SMEs, the implementation of new theoretical performance measurement methods passes over with rational usage of internal resources. Therefore, there is a clear need to stimulate the development of performance measurement system in SMEs considering the factors characterising these companies. Besides, from the SMEs perspective, the possible ineffectiveness of informal tools might be explained by the requirement of a greater investment in term of time, funds and energy (Kloviené, Speziale, 2015). Apart of this, each of the articles focusing on SMEs is dedicated only to manufacturing businesses.

After this study, there are revealed the gaps in literature. Implications for future studies should focus on small and medium-sized non-manufacturing enterprises, their efficiency, using of performance management and, above all, the design of a performance management system based on KPIs, BSC or combination both of them that helped companies and should be practically used for these businesses. This literary research will be used for the dissertation work, with the final output of which will be a system of key performance indicators based to a balanced scorecard approach, which should be applicable in practice to the monitored enterprises. In the end, the system will be practically implemented in one of the monitored companies and a re-evaluated.

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