Strategic Performance Measurement Systems Implemented in the Biggest Czech Companies with Focus on Balanced Scorecard - An Empirical Study

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Abstract

The goal of this paper is to publish the final results of our original empirical research into performance management topics among the biggest Czech companies from the viewpoint of a number of their employees. Specifically, we pay attention to the part of the research that was dedicated to the analysis of balanced scorecard and similar systems. The paper includes both a brief overview of relevant literature and discussion of the results of our empirical research. Firstly, we present various properties of performance measurement and management systems separately for BSC adopters and BSC non-adopters and compare these two groups of companies. Secondly, for BSC adopters we analyze properties of their systems and discuss obtained results.

Key words: performance measurement, BSC

1. INTRODUCTION

This paper was prepared as an output of the research project "Performance measurement and management system and its connection with the system of rewarding and motivating workforce" registered by the Internal Grant Agency of the University of Economics, Prague under the registration number F1/9/2011 (internal grant number IG107021).

Within our project we are trying to develop a methodology for quick and yet comprehensive estimation of the maturity of the implemented performance measurement and management system (hereinafter we use "PMMS" for performance measurement and management system, "PMS" for performance measurement system and "PM" for a performance measure) in its relation to rewards system (abbreviated "RS" hereinafter).

After an extensive literature review we developed a questionnaire, which investigates crucial properties of PMMS, RS and their interconnections. Based on the obtained results, partially described in this paper, and further investigation into the topic of performance measurement and management, we plan to carry out several structured interviews to find out whether companies consider the questionnaire to be an effective basis for analysis of their performance measurement and management systems. Consequently we plan to utilize obtained findings for further improvement of the methodology for evaluation of PMMS. Last but not least, although our research is framed as one-off survey, it may serve as a basis for a longitudinal research.

Due to the large extent of the questionnaire, in this paper we deal solely with the final results of the first phase of our empirical research, which was conducted using the above mentioned comprehensive questionnaire. Yet more specifically, our attention is aimed to the analysis of the

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responses regarding adoption of BSC-like systems (hereinafter we use terms "BSC" and "BSC-like strategic PMMS" as synonyms) and at the same time, we compare properties of PMMSs of both BSC adopters (that is companies, which positively answered question "Is your company using a strategic performance measurement system that includes both financial and non-financial measures grouped into several perspectives?") and BSC non-adopters (that is companies, which answered the above mentioned question negatively). We decided to focus on BSC especially because of its integrity, emphasis on strategy, maturity and broad worldwide adoption by companies.

2. LITERATURE REVIEW

Because of the existence of many articles that are trying to summarize findings in the area of our interest and because of the limited scope of our article, we do not strive to provide another more or less comprehensive review of the literature here. Stating this, we do not want to suggest that existing review articles cover all important findings and that it is impossible to find a new and fruitful perspective on existing knowledge about PMMSs and specifically about BSC - we suppose to give a more comprehensive review of literature dealing with BSC in another paper within our research project. In this article is given only a summary of important "review" articles on PMMSs published up to date. Consequently we address review articles on BSC and articles dealing with the methodology of BSC empirical research.

2.1 Review articles on PMMS

In this chapter is given an overview of papers that are trying to summarize the most important topics and findings covered by the existing literature on PMMSs as well as suggest a research agenda for the future.

Neely and his colleagues published several outstanding review articles, starting from 1995. Neely, Gregory and Platts (1995) structured their review into four sections. The first three sections were structured around a three-level framework, highlighting the fact that performance measurement system can be examined at three levels – level of individual performance measures, level of the set of performance measures and in its relationship with environment in which it operates. Fourth part of the article is dedicated to the proposals for the future research. In 2005 an update of this article was published (Neely, 2005), where new contributions to the field of performance measurement and management were summarized with help of a citation/co-citation analysis. The last review article in this line of literature was published by Neely, Kennerley and Adams (2007) and addresses specifically topic of performance measurement frameworks.

Taticchi, Tonelli and Cagnazzo (2010) picked up the threads of Neely's work and published an update of Neely's (2005) article. Consequently they further extended their work (Taticchi, Balachandranand, & Tonelli, 2012).

Very broad and multidisciplinary review of PMMS literature is given and ideas for the future research are provided in (Bititci, Garengo, Dörfler, & Nudurupati, 2011), nevertheless without in-depth analysis. Similar approach is used in (Garengo, Biazzo, & Bititci, 2005), which is focused on performance measurement in small and medium enterprises.

Development of performance measurement systems in relation to management information systems is addressed in (Nudurupati, Bititci, Kumar, & Chan, 2011).

Another review article (Berry, Coad, Harris, Otley, & Stringer, 2009) is focused on themes in management control and builds upon works of Hofstede, Giglioni, Bedeian, Merchant, Simons Parker, Macintosh and Otley. Again, ideas for the future research are suggested in this article. Similarly (Zawawi & Hoque, 2010) give a detailed review of the literature on management accounting innovations (e.g. activity-based costing, activity-based management, time-driven ABC, target costing and BSC).

Last but not least, there is a series of publications by Otley, which are characterized by an effort to base research of performance measurement systems on more coherent theoretical foundations (according to Otley's own formulation). The last published review article in this line is as far as we know from 2009 (Ferreira & Otley, 2009).

We can sum up that according to the above mentioned review articles a lot of work in the field of performance measurement and management has been done and much more work has to be done in the future. On the one hand there is a broad agreement on basic research questions. On the other hand there is a large diversity of views on usefulness of individual frameworks and measures. The same goes for the area of incentives (rewards for performance).

2.2 Balanced Scorecard

BSC was introduced in an article by Kaplan and Norton (1992). Afterwards was BSC broadly accepted and implemented in thousands of companies across the world and penetrated even non-profit organizations and organizations in public sector. After publication of the mentioned article, Kaplan and Norton as well as other authors were gradually developing BSC into a more complex system, usable for describing, communicating, implementing and revising strategy. The fundamental texts on BSC are probably articles (Kaplan & Norton, 1992, 1993, 1996a, 2000, 2004b, 2005, 2008a), Kaplan (2005, 2010) and books (Kaplan & Norton, 1996b, 2001, 2004a, 2006, 2008b) to name those written by BSC creators. In these works (as well as in literature written by other authors) we can see development of balanced scorecard from a tool for multidimensional performance measurement (supplementing more traditional financial measures with non-financial measures, specifically with measures oriented toward customers, internal business processes and learning and growth activities) to the fully developed organizing framework for a strategic management system. This development is a reason why determination of impact of using BSC on performance is quite difficult as in fact there are differently developed strategic PMMSs all under the same name.

The most recent literature review and an attempt to summarize existing findings on BSC can be found in (Banchieri, Planas, & Rebull, 2011). Useful comparison of claims about BSC that can be found throughout literature was conducted in (Paranjape, Rossiterand, & Pantano, 2006). A review article dealing with history of the BSC from its earliest appearance to the present day was published by Saraiva (2011). Last but not least, a useful literature review can be found in (Andon, Baxter, & Mahama, 2005).

Because the main topic of this paper is presentation of results of our empirical research, the rest of this chapter will deal with articles important from the viewpoint of preparation and realization of an empirical research.

On the basis of our literature review we decided to largely adopt methodology outlined in (Burkert, Davila, & Oyon, 2010). Another important inspiration we take from (Hoque & James, 2000) and (Speckbacher, Bischof, & Pfeiffer, 2003) and of course from numerous articles written by BSC creators – Kaplan and Norton. Interesting is also paper by Soderberg, Kalagnanam, Sheehan, and Vaidyanathan (2011), which methodologically differs a bit from the previously mentioned articles.

Burkert et al. (2010) start with suggestions for sample construction and assert longitudinal research. Our sample was given by our decision to contact 150 biggest Czech companies according to the number of their employees. Longitudinal research is prospective; nevertheless primarily we framed this research project as one-off survey.

Burkert et al. (2010) underline that simply asking companies whether they use BSC is not suitable because some companies will answer "yes" due to considering use of BSC as "socially" desirable, some companies will answer "yes" while having only a number of unlinked financial performance measures and non-financial performance measures, some companies will answer "no" while using a similar system but naming it differently.

For overcoming this problem Speckbacher et al. (2003, p. 363) suggest differentiating the following BSC types:

- BSC I – a specific multidimensional framework for strategic performance measurement that combines financial and non-financial strategic measures.
- BSC II – a Type I BSC that additionally describes strategy by using cause-and effect relationships.
- BSC III – a Type II BSC that also implements strategy by defining objectives, action plans, results and connecting incentives with BSC.

Speckbacher et al. (2003) claim that these three types range from minimum-standard (Type I BSC) to fully developed (Type III BSC) and can be interpreted as three evolutionary steps in the process of BSC implementation. We do not fully agree with this proposition. Without trying to conduct a deeper analysis here, we want to point out that the above mentioned balanced scorecard types probably should not be considered as "evolutionary steps", at least not in the sense of "quality, maturity and usefulness" of the implemented BSC in a given company. For example Banchieri et al. (2011, p. 158-159) based on work of (Bukh and Malmi, 2005) identified conditions under which striving to find causal relationships between performance measures is not fruitful (or is even problematic) and classified them into several types. Similarly, connecting balanced scorecard with employees' rewarding is not without risks as well. Furthermore because different BSC types are defined in a cumulative manner (individual BSC types are defined as previous type plus some additional property), a problem with classification may occur when a company has BSC linked to incentives (property which appears in BSC of the type III), but causal relationships are not deployed. Anyway, we adopted this classification, but instead of actions plans/targets respondents were asked about strategic initiatives and for BSC III was sufficient connecting BSC with incentives.

Burkert et al. (2010) also emphasize necessity of enquiry into the stage of development of BSC in a given company (design, implementation, in use for some time). Speckbacher et al. (2003) proposed the following states of BSC implementation - no contact with BSC, know BSC, studied

BSC, but no concrete steps taken, firsts steps already taken, BSC project exists/have existed, BSC implemented in individual business units, BSC implemented for entire company.

Other suggested areas for investigation according to Speckbacher et al. (2003) are used perspectives, used components (strategic objectives, targets or action plans, cause-and-effect relationships), interconnection of BSC with incentives, level of BSC implementation (corporate, business unit, plant, department, team, individual), motivation for using BSC and expected benefits, experiences, importance and the future priority of BSC projects and reasons for not implementing or for discontinuing BSC.

As for evaluation of BSC systems Burkert et al. (2010) suggest to assess firstly improvement of companies' general management practices (which can be subdivided into overall performance measurement and specific management practices, e.g. elaboration and communication of strategy and monitoring of objectives achievement), secondly achievement of organizational performance outcomes (subdivided into soft value drivers of the future organizational success and financial measures) and finally satisfaction with the system.

As for contextual variables Burkert et al. (2010) emphasize company size and environmental uncertainty of the external environment. Furthermore internal factors like attitude toward newer management tools and number of newer measurement practices relied on should be taken into account.

In our research we addressed most of the above mentioned areas, but we did not evaluate objective impact of BSC adoption on performance (nevertheless we evaluated subjective feelings about contribution of BSC to a company's performance).

3. EMPIRICAL RESEARCH – RESULTS

We conducted our empirical research among the biggest Czech companies from the viewpoint of the number of their employees. By the term "company" we understand organizations dealing with production and trade of goods and services. Other organizations are not addressed (e.g. organizations in financial sector, non-profit organizations etc.). We obtained the database of the biggest Czech companies according to the number of employees upon request from the Czech Statistical Office.

The research was conducted with help of a questionnaire containing in total 72 questions (usually with sub-questions) in 3 parts. Part A has 15 questions and part B has 35 questions. Parts A and B should be preferably filled by CFO or controller. Part C has 22 questions and should be filled by HR manager if possible. Following short conversation by phone the questionnaire was distributed via e-mail in the form of two MS-Word documents (one for CFO, one for HR manager).

Part A examines basic information about a company, the quality of strategy formulation and formal strategy execution process and finally level of use of selected contemporary methods of managerial accounting.

Part B deals with specific methods of performance measurement and management and is divided into 5 sections - the overall characteristics of the implemented PMMS and strategic performance measurement and management (specifically BSC-like strategic PMMSs); financial measures; non-financial measures; performance measurement and management in connection with incen-

tives and subjective feelings about the quality of the implemented PMMS and about performance of the company in comparison with its competitors.

Part C is fully dedicated to rewarding of employees and to the other methods of influencing their behaviour in relation to performance measurement and management system.

We contacted 150 companies. After excluding unusable questionnaires, we have in total 22 filled-in ones, 3 companies sent only HR part of the questionnaire. Because in this paper balanced scorecard-like systems are addressed, we excluded these three companies. Hereinafter we thus deal solely with 19 companies that returned CFO part. Our response rate is approximately 13 percent.

The analysis is divided into 2 parts. In the first part responses to a series of questions that we asked both BSC adopters and BSC non-adopters are analyzed and answers of those two groups of respondents are compared. Because of the relatively small sample size and due to the fact that our respondents had similar BSC type (see also chapter 3.3), we did not further differentiated BSC adopters for the sake of this analysis. In the second part we deal with questions which we asked only BSC adopters.

3.1 Sample characteristics

Of 19 respondents, 10 were BSC adopters and 9 were non-adopters. Thus, the amount of adopters is 52,63 % of all respondents. This result is in accordance with high BSC penetration reported in literature - for example in (Banchieri, Planas, & Rebull, 2011) is mentioned adoption rate in range from 40 % to 53 %.

Tab. 1 – Characteristics of respondents (year = 2010, N=19). Source: own elaboration

Characteristics	BSC adopters		BSC non-adopters	
	Mean	Median	Mean	Median
Number of FTE	4 438	1 482	5 802	2 750
Assets (millions of CZK)	10 309	2 664	8 899	4 757
Turnover (millions of CZK)	7 031	3 693	9 696	5 041

Based on the data from Tab. 1 we can conclude that BSC adopters are "smaller" from the viewpoint of all characteristics except mean value of assets. This is a bit surprising as we would expect that BSC adoption will be higher with "larger" companies because such companies need a formalized tool for the implementation of their strategy, but our results did not confirm such reasoning. Relevance of these findings is discussed in chapter 4.

3.2 Comparison of selected statistics of BSC-like strategic PMMS adopters and non-adopters

Firstly, we asked our respondents to evaluate on a scale from 1 (not important) to 7 (very important) the importance of various characteristics of their competitive environment (quality, product innovations, marketing innovations, process and organizational innovations, customer service, price, timely delivery of products/services and flexibility). Consequently we computed an "index of competitive environment", which is a proxy designed as a simple arithmetic mean

of all the mentioned characteristics. The value of this index is 5,18 for BSC adopters and 5,29 for BSC non-adopters. It is often supposed that growing uncertainty in competitive environment, respectively higher intensity of importance of factors of competitive environment leads to a higher adoption rate of the BSC-like systems. Nevertheless our result did not confirm this presumption - mean values of some factors of the competitive environment (product innovations, process and organizational innovations, customer services, flexibility) were slightly higher in the group of BSC adopters, other (quality, market innovations, price, timely delivery of products/services) were slightly higher among BSC non-adopters.

Secondly, we asked our respondents about intensity of utilization of various contemporary managerial accounting methods because literature often presumes that utilization of these practices is connected with higher adoption of BSC-like systems (see Tab. 2).

Tab. 2 – Contemporary methods of managerial accounting in use (scale (1) not implemented at all ... (7) fully implemented). Source: own elaboration

Method of managerial accounting	BSC adopters			BSC non-adopters		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Activity based costing	4,70	5,50	2,26	2,88	2,00	2,42
Activity based management	3,80	4,00	1,81	2,00	1,00	1,77
Customer profitability analysis	5,50	6,50	2,12	4,67	5,00	2,29
Life cycle costing	3,00	2,50	2,11	2,00	1,00	1,32
Costing with differentiated variable and fixed costs	5,70	6,50	1,83	5,78	6,00	1,64
Utilization of economic structure of a company	6,80	7,00	0,42	6,89	7,00	0,33
Utilization of transfer prices	5,15	6,00	2,38	6,00	7,00	1,94
Benchmarking	4,20	5,00	1,55	3,78	4,00	1,86
Reporting on company's market and competitors	4,40	4,50	1,65	4,44	5,00	1,67

For all variables mentioned in Tab. 2 we used ANOVA (analysis of variance) to determine whether there is statistically significant difference among BSC adopters and BSC non-adopters.

The only characteristic where significant statistical difference was found is utilization of activity based management, but very close to significant statistical difference was also utilization of activity based costing (see Tab. 3). We discuss obtained results in the chapter 4 in detail.

Tab. 3 – Results of ANOVA for methods of managerial accounting from Tab. 2. Source: own elaboration

Method of managerial accounting		Sum of Squares	df	Mean Square	F	Sig.
Activity based costing	Between groups	21,783	1	21,783	3,926	0,064
	Within Groups	94,322	17	5,548		
	Total	116,105	18			
Activity based management	Between groups	19,371	1	19,371	5,970	0,026
	Within Groups	55,156	17	3,244		
	Total	74,526	18			

Thirdly, we asked our respondents a series of questions regarding the existence and quality of formalized process of strategy execution.

We also calculated an "Index of strategy formulation", which is a proxy designed as a simple arithmetic mean of all answers to the questions about the formalized process of strategy execution. Summarized results are in Tab. 4.

Tab. 4 – Formalized process of strategy execution (scale (1) fully disagree ... (7) fully agree). Source: own elaboration

Characteristics	BSC adopters			BSC non-adopters		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Strategic goals are clearly formulated	6,00	6,00	0,82	5,22	6,00	2,11
Measures for evaluation of fulfilling of strategic goals are defined	5,50	5,75	0,88	5,06	5,50	1,79
Measures are sufficiently cascaded down through org. structure of comp.	5,10	5,25	0,91	5,39	5,50	1,08
Strategic initiatives are put in place	5,33	5,00	1,12	4,56	5,00	2,19
Behaviour of organizational components is coordinated with company-wide strategy	5,55	6,00	0,69	5,44	6,00	1,67
Strategy is sufficiently communicated throughout all company	5,10	5,00	0,74	5,11	5,00	1,45
Successfulness of strategy implementation is evaluated and reported	5,53	5,67	0,57	4,78	5,00	1,83

Based on conducted analysis is strategy kept up to date	4,90	5,00	1,20	5,33	6,00	1,73
Based on strategy evaluation are updated strategic goals of a company	5,20	5,50	1,23	4,78	5,00	2,05
Index of strategy formulation	5,36	5,40	0,69	5,07	5,15	1,58

One of the aims of BSC-like systems is to improve process of strategy execution and thus it is possible to suppose that BSC adopters should display higher quality of this process, nevertheless our results are not fully persuasive. Yet, BSC adopters demonstrate slightly higher quality of formalized strategy execution process in the majority of its attributes. Compared to BSC non-adopters, BSC adopters are slightly underperforming only in the areas of updating strategic goals and cascading performance measures through organization. For all variables mentioned in Tab. 4 we used ANOVA to determine whether there is statistically significant difference among BSC adopters and BSC non-adopters, but without any statistically significant result. Overall, all mean values of characteristics of formalized strategy execution process components are above 4, which indicates good quality of formalized execution process among respondents.

Fourthly, we were investigating agreement with propositions about properties of the design of performance measurement system. Obtained answers are summarized in Tab. 5.

Tab. 5 – Design of performance measurement system (scale (1) fully disagree ... (7) fully agree). Source: own elaboration

Characteristics	BSC adopters			BSC non-adopters		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.
There is a person (team) responsible for the overall conception of PMS	6,10	6,00	0,88	5,78	5,00	0,97
The person (team) has enough authority to perform their task	5,35	5,50	1,06	5,44	5,00	1,24
Data entry is optimized	5,31	5,38	1,34	5,31	5,50	1,29
Stakeholders are taken into account in the process of measures selection	4,60	5,00	1,51	4,33	4,00	1,73
Internal measures are included	5,60	5,50	0,97	5,44	6,00	1,42
External measures are included	4,60	4,50	1,26	5,11	6,00	1,69
Short-term oriented PMs are included	5,80	6,00	1,14	5,22	5,00	1,20
Long-term oriented PMs are included	4,90	5,00	1,37	4,11	4,00	2,09
Financial measures are included	5,70	6,00	1,64	5,56	6,00	1,67

Non-financial measures are included	6,00	6,00	0,82	4,11	4,00	2,26
Causal relationships among PMs are suggested and verified	4,35	4,50	1,23	4,11	4,00	1,65
Goals and reference points are continuously reviewed and revised	5,60	6,00	1,07	5,44	5,00	1,33
There is a formalized process for continuous updating of individual PMs	4,10	4,00	1,73	4,00	4,00	2,29
There is a formalized process for continuous updating of PMS	4,50	4,50	1,35	4,33	4,00	2,00
Obsolete PMs are removed	5,00	5,00	0,94	4,94	5,00	1,38

Again, mean values demonstrated by BSC-like systems adopters were slightly higher in the majority of observed characteristics. The most significantly BSC adopters outperformed non-adopters in characteristics "non-financial measures are included" and "long-term oriented measures are included", which accords with our assumptions. On the contrary, BSC non-adopters outperformed adopters in characteristics "external measures are included", which can be interpreted as confirmation of the fact that inclusion of external measures has no connection with utilization of BSC-like systems. Anyway, use of external measures and generally of external benchmarking seems to be a weak point of the implemented PMMSs (both with BSC adopters and non-adopters). For all variables mentioned in Tab. 5 we used ANOVA to determine whether there is statistically significant difference among BSC adopters and BSC non-adopters. The only indicator where significant statistical difference was found is utilization of non-financial measures (see Tab. 6).

Tab. 6 – Results of ANOVA for the selected characteristics from Tab. 5. Source: own elaboration

Characteristics		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Non-financial measures are included	Between groups	16,901	1	16,901	6,127	0,024
	Within Groups	46,889	17	2,758		
	Total	63,789	18			

Consequently we were asking respondents about functions and assessment of their performance measurement and management systems including a subjective evaluation of the overall quality of this system. Received answers are summarized in Tab. 7.

Tab. 7 – Functions and assessment of PMMS (scale (1) fully disagree ... (7) fully agree). Source: own elaboration

Characteristics	BSC adopters			BSC non-adopters		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Enables to analyze past performance	5,90	6,00	0,99	5,00	5,00	2,00
Enables to predict future trends	4,80	5,00	1,03	3,89	3,00	2,03
Has a positive impact on employees behaviour	5,00	5,50	1,15	5,56	5,00	1,01
Decreases uncertainty and supports decision-making	5,20	5,00	1,23	5,89	6,00	1,17
Helps to implement company's strategy	5,50	5,00	1,18	5,67	6,00	1,73
Is harmonized with employees' rewarding	5,50	6,00	1,35	5,78	6,00	1,48
By employees perceived positively, largely as a tool of improvement	4,50	4,00	1,18	4,56	5,00	1,94
Gives enough information for making important decisions	5,30	5,50	1,06	4,78	6,00	2,05
Subjective evaluation of the overall quality of the implemented PMMS	5,40	5,50	0,70	4,33	5,00	1,22

It is possible to resume that obtained results are not unambiguous. For all variables mentioned in Tab. 7 we used ANOVA to determine whether there is statistically significant difference among BSC adopters and BSC non-adopters, the only statistically significant result we received for the last row of Tab. 7 "Subjective evaluation of the overall quality of the implemented PMMS" (see Tab. 8).

Tab. 8 – Results of ANOVA for the selected characteristics from Tab. 7. Source: own elaboration

Characteristics		Sum of Squares	df	Mean Square	F	Sig.
Subjective evaluation of the overall quality of the implemented PMMS	Between groups	5,389	1	5,389	5,587	0,030
	Within Groups	16,400	17	0,965		
	Total	21,789	18			

In some characteristics, BSC adopters outperform BSC non-adopters, while in the others they underperform BSC non-adopters. Specifically, BSC adopters display higher mean value in characteristics "ability to analyze past performance" and "ability to predict future trends". Slightly higher mean value BSC adopters display also in characteristic "gives enough information for making important decisions". Other characteristics (except the subjective evaluation) seem to be better implemented among BSC non-adopters. Subjective evaluation of the overall quality of the implemented PMMS is - on average - higher among BSC adopters than among BSC non-adopters.

Furthermore we asked our respondents to indicate how they perceive performance of their companies in relation to their competitors. As for BSC adopters, 4 companies indicated to perform above the average and 5 reported an average performance. As for BSC non-adopters, 5 companies reported to perform above the average, 2 reported an average performance, 1 reported to perform under the average and 1 indicated that they are not able to answer this question.

Finally, we asked our respondents how well their performance measures meet demands formulated by Neely, Richards, Mills, Platts and Bourne (1997), see Tab. 9.

Tab. 9 – Characteristics of individual performance measures (scale (1) fully disagree ... (7) fully agree). Source: own elaboration

Characteristics	BSC adopters			BSC non-adopters		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Purpose why the measure is utilized is clearly defined	6,20	6,00	0,92	6,11	6,00	1,27
Objectives that are supported by the measure are clearly defined	5,60	5,50	0,97	5,22	6,00	2,05
Target value of the measure is set including time horizon in which the measure should reach the desired val.	5,70	6,00	1,16	5,89	7,00	1,54
Calculation of the value of a given measure is clearly described	6,30	6,00	0,67	5,78	6,00	1,64
Calculation is set so that it does not conduct undesired behaviour of employees	5,90	6,00	0,99	5,67	6,00	1,58
Frequency of measurement is defined	6,10	6,50	1,29	5,89	7,00	1,54
It is set who measures	6,20	6,50	1,03	6,00	7,00	1,32
It is set who acts on the data	5,60	6,00	1,07	5,78	6,00	1,30
It is set what they do	4,30	4,00	1,25	4,44	4,00	2,07
Process of updating of the measure is tracked	5,00	6,00	1,63	5,11	5,00	1,96

For all variables observed in Tab. 9 we used ANOVA to determine whether there is statistically significant difference among BSC adopters and BSC non-adopters, but – not surprisingly - without statistically significant result.

In the previous analysis we focused on differences between BSC adopters and non-adopters, but there are also some "weak points" common both to BSC adopters and BSC non-adopters; we discuss them in the chapter 4 in detail.

3.3 Properties of PMMS evaluated only for BSC adopters

As was already mentioned in the chapter "Introduction", we differentiated BSC adopters and BSC non-adopters by asking our respondents the following question: "Is your company using a strategic performance measurement system that includes both financial and non-financial measures grouped into several perspectives (for example financial perspective, customer's perspective, internal processes perspective etc.)?". In case that a respondent answered this question positively, we considered them to have at least BSC of the type I and we asked them to answer a set of questions aimed at specific features of their strategic BSC-like system. The most important results of this research are presented and analyzed below.

By asking respondents to which degree they agree with propositions about selected properties of their BSC-like PMMS we tried to obtain information, which BSC-type they use. All BSC adopters have "measures linked by causal relationships" and therefore they have BSC of the type II according to our classification. All BSC adopters also have strategic initiatives put in place, 9 of 10 BSC adopters check real existence of the suggested causal relationships between used measures and finally, 9 of 10 BSC adopters use BSC for setting rewards of their employees. Thus we can conclude that 9 of 10 of our respondents claim to use BSC of the type III and 1 respondent claim to use BSC of the type II.

Furthermore we were investigating the importance of the individual perspectives. Obtained results were not surprising. Perspectives are perceived as to some extent differently important while financial perspective is substantially more important than the other perspectives. On a scale from 1-not important to 7-very important, financial perspective obtained mean value 6,20, customers' perspective 5,00, internal business processes' perspective 5,22 and perspective of learning and growth 4,80.

We do not want to analyze here in detail how thoroughly companies utilize approach known as "cascading", but we can conclude, that 80 % of our respondents cascade measures at least to the level of their departments. To the level of individual employees cascade their measures 30 % of our respondents.

Reasons for the implementation of BSC-like systems were also investigated. We selected reasons for BSC-like system adoption that are often mentioned in literature and asked our respondents to rank importance of these reasons on a scale from 1-not important to 7-very important. Respondents could also add other reasons, but no one of them did so. The three reasons with the highest mean value are: improving of long-term financial performance, creating of consistent set of measures and improving of decision making.

Next we asked our respondents what are the most important obstacles that they face during implementation of their BSC-like strategic PMMSs. According to the received answers, the three most important obstacles in implementation of BSC are: finding right measures, finding causal

relationships between measures and linking BSC-like system with rewarding. Support from top-management for strategic PMMS is according to the results of our survey the least important obstacle in developing BSC-like strategic PMMS. This is not surprising because without support from the top-management is implementation of BSC-like systems very difficult and companies without such support are among "non-adopters".

All companies reported that BSC contributes to their success. Any of BSC adopters reported intention to discontinue using BSC.

4. DISCUSSION OF RESULTS

In this chapter we want to discuss obtained results from a bird's-eye view as well as assess relevance of our results.

Firstly, for selected contingent variables (size of the company, intensity of competition, utilization of the contemporary managerial accounting techniques) we were checking whether these variables influence BSC adoption. As for the size of the company we can conclude that according to our results BSC adoption is not higher among "larger" companies (see Tab. 1). Well, we maintain a position that this result should not be overestimated because in fact, all our respondents belong among "large companies" and "smaller" thus here does not mean "small". As for the perceived intensity of competition (measured by the index calculated as a proxy of perceived importance of various factors of competitive environment), we can conclude that BSC adopters perceive their environment as slightly less competitive (matching index value is 5,18 with standard deviation 0,91) than BSC non-adopters (matching index value is 5,29 with standard deviation 0,81) and thus we can conclude that BSC adoption is not growing with perceived intensity of competition.

Furthermore we investigated interlink of BSC adoption with utilization of other contemporary managerial accounting techniques (see Tab. 2). Statistically significant difference between BSC adopters and BSC non-adopters was found in the area of utilization of ABM (Sig. = 0,026). Very close to the limit value (Sig. = 0,05) was also difference between BSC adopters and BSC non-adopters in the area of utilization of ABC (Sig. = 0,064). On the one hand, BSC and ABC/ABM are often understood as independent methods (though Norton and Kaplan were addressing both these concepts intensively in their works). On the other hand, BSC can be populated (especially its customer and internal business processes perspectives) with measures from ABC/ABM which should increase the quality of the information included in BSC. We propose that high ABC/ABM adoption stems from the fact that companies want to populate their scorecards with reliable measures and at the same time they believe that utilization of ABC/ABM gives them a more accurate way of assigning overhead costs to products and customers. We want to verify this assumption in the second phase of our empirical research.

Secondly, comparing properties of PMMSs of BSC adopters and BSC non-adopters, we got not fully convincing, statistically significant results as our results for the quality of formalized strategy execution process (see Tab. 4) are seemingly not very persuasive. But after a more punctual consideration we propose that BSC adoption has a positive impact in this area. Not only that the calculated "index of strategy formulation" is higher among BSC adopters, but yet more importantly, we can see that standard deviation of answers is among BSC non-adopters higher

than among BSC adopters, which implies that BSC adopters achieve desired properties of their strategy formulation and execution in a more steady manner.

As for an overall design of performance measurement system we can again conclude (using comprehensive index based on values from Tab. 5) that in total, values of answers obtained from BSC adopters are higher (mean value equals to 5,17 for BSC adopters and 4,88 for non-adopters) and more stable (standard deviation is 0,76 compared with 1,21). The highest and statistically significant difference between these two groups is in utilization of non-financial measures. Due to the fact that contemporary literature and practice stress the growing importance of non-financial measures (e.g. because these can serve as value drivers of the future performance), we consider higher adoption of non-financial measures to be a positive property of PMMSs as implemented among BSC adopters. We consider as interesting also the fact that answer to the question about taking stakeholders into account is not noticeably different between BSC adopters and non-adopters. This result confirms claim of Norton and Kaplan that BSC is primarily more "shareholder-based" than "stakeholder-based" approach (while e.g. performance prism framework stresses the importance of taking into account interests of all relevant stakeholders).

As for functions and assessment of PMMS (see Tab. 7) we would like to stress that in total, values (using index computed as a simple arithmetic mean of values from Tab. 7 except "Subjective evaluation of the overall quality of the implemented PMMS") obtained from BSC adopters are again higher (i.e. mean value 5,21 for BSC adopters, and 5,14 for non-adopters) and more stable (i.e. standard deviation 0,72 for adopters and 1,28 for non-adopters). More importantly, BSC adopters display higher mean value in characteristics "ability to analyze past performance" and "ability to predict future trends" which we interpret as in accordance with the above mentioned positive impact of inclusion non-financial indicators into strategic PMMS. An important finding is that value of subjective feeling about the quality of their PMMS is higher among BSC adopters; according to ANOVA there is statistically significant difference between BSC adopters and BSC non-adopters (see Tab. 8). As for the quality of individual measures (see Tab. 9), there are not significant differences between BSC adopters and BSC non-adopters.

Thirdly, as for findings exclusively for BSC adopters we would like to mention that we obtained an important and persuasive result as for views of our respondents about usefulness of BSC for their success. We asked BSC adopters whether they consider BSC-like strategic PMMS to be contributing to their success. Mean value of responses was 6,00 (scale from 1-disagree to 7-fully agree), and all companies felt that BSC contributes to their success (all answers above 4). As for dynamics, 8 respondents declared that they plan to expand BSC implementation, 3 respondents declared that they would keep their BSC system "as it is", no one of our respondents plan to discontinue using BSC.

Last but not least, we have identified that there are some weak points of PMMS that are common to both BSC adopters and BSC non-adopters. Firstly, at the level of functions and assessment of PMMS (Tab. 7) we can see that one of the weakest points of PMMSs is that employees often do not consider performance measurement and management systems to be primarily a tool for improving performance. Relatively low mean value among BSC non-adopters can be found also in characteristics "enables to predict future trends". Moreover companies consider these properties to be relatively less important than other mentioned properties of PMMS (this cannot be seen from Tab. 7, but we were investigating opinions about importance of analyzed characteristics as

well). These results are quite surprising and alarming because contemporary literature considers ability of PMMSs to predict future trends to be of crucial importance. Moreover, positive environment for measurement is - according to the contemporary literature, e.g. (Spitzer, 2007) - together with acceptance of measurement from employees also very important because such environment enables measurement to be more objective, more accurate and turns measurement into a real tool for improving performance. Underestimating importance of the mentioned properties can lead into serious problems. In any case under such conditions it is difficult to have an excellent performance measurement and management system. Due to this fact we incline to the opinion that our respondents were more or less systematically overestimating the quality of their systems in their subjective assessments. Secondly, at the level of individual measures (see Tab. 5 and Tab. 9), both BSC adopters and BSC non-adopters display relatively low mean value of characteristic "it is set what they do". Absence of formalized reaction to the results of measurement can lead to the situation when performance is measured but no one exactly knows how to tackle obtained results. Relatively low value (adopters 4,10, non-adopters 4,00) can be observed as well for formalized process for continuous updating of individual PMs. Respondents were also asked to name properties of performance measures that are (according to their opinion) highly important and at the same time are not included in Tab. 9. No one of our respondents mentioned additional property and so we can conclude that the set of properties in Tab. 9 is a comprehensive one. Finally, both BSC adopters and non-adopters demonstrate relatively low value as for conduction of benchmarking (adopters 4,20, non-adopters 3,78), which is in accordance with warning that BSC is a static model that does not consider the external context (Banchieri, Planas, & Rebull, 2011, p. 157).

5. CONCLUSION

In the first part of this paper is given a short overview of the literature aimed on performance measurement and management that is most relevant for our empirical research. As for general PMMSs literature, we tried to introduce the most comprehensive review articles. As for balanced scorecard, we did the same and moreover we focused on articles dealing with methodological issues connected with an empirical research of BSC-like systems.

In the second, crucial part of the paper, results of our empirical investigation among the biggest Czech companies are presented and discussed.

In the first part of our analysis we compared responses to questions that were asked both BSC-adopters and BSC non-adopters. Our research did not confirm assumption that BSC adopters would be companies which perceive their environment as more competitive than BSC non-adopters. Impact of the utilization of various contemporary accounting management practices on adoption of BSC-like systems was also checked and we can conclude that we found statistically significant difference between BSC adopters and BSC non-adopters as for utilization of ABM. Very close to the significant difference is also difference between BSC adopters and BSC non-adopters as for utilization of ABC. Consequently, we analyzed the existence of formalized strategy execution process and various properties of PMMSs separately for BSC adopters and BSC non-adopters and compared these two groups of companies.

In the second part of our analysis, we evaluated answers obtained from BSC-like systems adopters about specific features of their strategic PMMS. Nearly all (9 of 10) of our respondents have BSC of the type III, which means that all BSC adopters with the exception of one utilize measures from their balanced scorecard for decisions about rewarding their employees. Companies reported to use 4 "classical" perspectives (financial, internal business process, customer, learning and growth), no one company mentioned additional perspective. The most important perspective is the financial one. Companies with implemented BSC-like systems are basically of the opinion that such systems are "contributing" to their success and no one of BSC adopters wants to abandon it. Nevertheless companies face many problems with implementation of their strategic PMMSs. Especially difficult is for them finding right measures, finding causal relationships between measures and linking BSC-like system with rewarding.

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