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Key Features of Strategic Performance Management Systems in Manufacturing Companies

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Abstract

The field of business performance measurement a management is developing quickly as response to global trends and changing roles of companies. There is no agreed viewpoint for an ideal performance measurement framework in literature, though many holistic systems have been developed. Within this context, presented paper focuses on investigation of the features, characteristics and roles of performance measurement systems in Czech large size manufacturing companies from two points of view. First is to identify and analyze the current form of performance management in selected companies. Second is to determine the features that have to be met in the future to design effective PMS. At this point it is necessary to emphasize that the main discussion is given to Czech large size manufacturing companies from both points of view. In order to fulfil these objectives, a method of case studies analysis is used.

Keywords: Performance measurement system, Manufacturing companies, Financial and non-financial indicators, Strategy

1. Introduction

The context within which performance measurement and management is used is changing. The traditional approaches to performance measurement have been on financial measures only. By the late 1980s, studies had shown that historic financial measures are not enough sufficient for understanding the performance management in the new economy because of the increasing complexity of organizations and the markets in which companies compete (Kagioglou et al., 2001, Kennerley, Neely, 2002). In today's dynamic business environment, using only financial criteria for assessment and management of company activities is therefore inadequate and recently we can thus see the growing emphasis laid on using of leading non-financial criteria (Ittner et al., 2003, Epstein, Manzoni, 1997).

In the field of business performance measurement, a diverse and multi-disciplinary research is appearing. This brings different attitudes towards performance measurement and causes complications. Marr and Schiuma (2003) state on the basis of citation analysis that there is a lack of a cohesive body of knowledge in the field of business performance measurement. The field of performance management is very diverse, because researchers contributing to

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performance measurement come from different disciplines mainly strategic and general management, operations management, marketing, and finance and accounting. This multi-disciplinary of research is appealing carries the danger of hindering developments in the field of business PM (Neely, 2002).

Moreover the literature that is directly or indirectly concerned with performance measurement largely follows the global trends and changing roles of business. But what about the business practice? The key questions posed are: *"Is performance management of Czech large size manufacturing companies ready for changing global trends?"*, *"What are the gaps of senior manager's knowledge regarding performance management system?"* and "*How significantly current practice of business performance measurement in selected manufacturing companies differs from the theoretical basis*? This paper is structured as follows. First brief literature review related to the research topic is conducted. Second, the research methodology, introduction of companies and analyses results will take place. Finally, the limitations and conclusions of this research study will be outlined.

2. Literature Review

Even though much research has been conducted on the issues of performance measurement the definition of performance measurement is still debated (Wu, 2009). The most cited performance measurement definition is Neely et al. (2002) "the process of quantifying the efficiency and effectiveness of past actions" (In Moullin, 2003). This definition stresses effectiveness as well as efficiency, but does not indicate what quantify or why. The explanation that gives better guidance to people involved in PM performance measurement with an emphasis on measurement of value that the organisation deliver to the customers is following "PM is evaluating how well organisations are managed and the value they deliver for customers and other stakeholders" (Moullin, 2003). Performance measurement is an essential presumption for performance management.

Performance management is an instrument for achieving better results in the organization, teams as well as individuals thereby the performance is understood and managed within the agreed and planned goals, standards and competencies. It is a procedure of creating a shared vision of what should be achieved. It is an approach to the management and development of people in the way that increases the likelihood that both short and long term objectives will be accomplished (Wagnerova, 2011). Thereafter, performance management could be characterized as a process by which the organization integrates its performance with its corporate and functional strategies and objectives (Bitici et al., 1997). In this context, performance management is a strategic approach to management which provides managers, employees and stakeholders at different levels with instruments necessary in order to regularly plan, continuously monitor, periodically measure and review performance of an organisation.

There are several considerations in the implementation of performance management models – strategic planning, operationalization and review (Robisnosn et al., 2005). The critical part is choosing an appropriate strategic framework to integrate the business objectives. Operationalization of the strategic plan by developing a set of performance measures to monitor corporate strategy and objectives necessary to assess continues performance improvement is the next stage (Basu, 2001). The final phase requires a review of results, the implications for learning and knowledge management and performance improvement initiatives to reach key business goals. By the term key performance indicators (KPI) we mean the set of performance measures that lead to the achievement of current and future business success (see Parmanter, 2007).

Performance measurement system (PMS) supports a performance management philosophy and is situated at the heart of performance management process (Lebas, 1995, Bitici et al., 1997). Wagner (2009) defines a PMS as a system which consists of components that are individual performance measures through which we describe the elements, their characteristics and relationships within examined model for performance measuring. PMS supports managers in the performance management process mainly fulfilling two primary functions: "the first one consists in enabling and structuring communication between all the organizational units (individuals, teams, processes, functions, etc.) involved in the process of target setting (Forza, Salvador, 2000). The second one is collecting, processing and delivering information on the performance of people, activities, processes, products, business units." The main components of a PMS are provided by for example Otley: objectives, strategy, targets, rewards, information flows (feedback and feed-forward) (Otley, 1999). The other characteristics of modern performance measurement systems could be stated by Gomes et al. (2004) or Kennerley and Neely (2002).

The most widely adopted PM systems are the Balanced Scorecard and the EFQM Business Excellence Model (Kaplan, Norton, 1996, EFQM, 2003). They both provide a structured approach for identifying improvement opportunities and threats, and translating companies' strategy in achievable goals, targets and specific tasks. In contrast to these frameworks, competing techniques were introduced, such as: The Performance Measurement Matrix, SMART Performance Pyramid, Performance Prism, Kanji Business Excellence Performance System, and Theory of constraints, among others (Lynch, Cross, 1991, Neely et al., 2002, Kanji, 2002, Goldratt, 1990).

3. Methodology

3.1. Research Goal and Methods

In literature we can find little consensus regarding the main components and features of performance measurement systems (Dumond, 1994, Wu, 2009). Hence the main goal of this research study is to investigate the features, characteristic and roles of PMS in Czech large size manufacturing companies from two points of view. First is to identify and analyze the current form of PMS in selected manufacturing companies. Second is to determine the features that have to be met by large size manufacturing companies in the future to design effective PMS. To be more precise, by features is meant elements which make up the system as well as roles (functions) that are performed by the PMS. The attention is also paid to factors that affect performance of the manufacturing enterprises and to aspects of successful performance management. The following specific research questions are answered:

1. According to your opinion, which factors are particularly affecting the performance of your company?
2. What framework (model, method) do you use for performance measurement?
3. What are the weaknesses of your current PMS? How should be your PMS modified?
4. Characterize the relationship between performance measurement and strategy in your company? How does your strategy affect the performance?
5. What roles does PMS in your company play?
6. What are the key financial and nonfinancial indicators that you use to measure the performance?
7. According to your opinion, what are the most important indicators to map the company performance?
8. What characteristics should the properly functioning PMS have?
9. What are the main components that make up effective PMS?
10. What do you identify as crucial elements of successful performance management?

In order to identify the key features of current and future PM systems, a case studies analysis is used. Totally six cases are analyzed through cross-case analysis. The qualitative research is particularly carried out by the method of semi-structured interviews with the usage of the 10 open questions. Semi structured interview is conducted with senior and middle level managers involved in performance management who are asked to respond the questions from an organizational as well as personal perspective. Further, the relevant PM documents in the case companies were studied. The process of building theory from case study research will be executed according to Eisenhardt (1989) framework. Sample will not be random, but reflected the selection of specific cases to extend the theory. Large size manufacturing companies were chosen by their experience with implementing PMS. The criterion that was used for the level of experience is time period during which the performance measurement system is created and implemented. All selected companies are working to establish the appropriate PMS for more than ten years.

3.2. Characteristic of case companies

ALPHA is a large company with 750 employees and turnover around CZK 400 million that manufactures machines and equipment, especially electric motors for general use. Its development and manufacture of products is providing according to ISO 9001 standards, which is regularly reviewed by an independent certification organization, internal and customer's audits. BETA is a subsidiary company of the international Japanese company that employs approximately 1400 employees and its annual turnover comes more than CZK 6.5 billion, particularly producing air conditions and their parts for automotive industry. The company has implemented quality management system ISO/TS 16949:2002 as well as environmental management system ISO 14001:2005. GAMMA is part of a multinational company that is a leading provider of electronic manufacturing services and in Czech Republic has around 200 employees. DELTA is a factory of a one of the largest bus manufacturer in Europe that employ 1900 employees and annual sales amounted to CZK 9, 5 million. Its management system is based on the Deming cycle, benchmarking and

World Class Manufacturing method. EPSILON is a company specialize in producing and processing high-quality glass fibre that belongs to the multinational concern. High product quality is ensured by the implementation of quality management system according to international standard ISO 9001:2008 and WCM principles. ZETA is major European manufacturer active in the area of speciality chemicals that employ 1600 employees and its turnover is more than € 100 million. Its operations are managed through quality management system based on ISO 9001, environmental management according to ISO 14001 management of health and safety in workplace according to OHSAS 18001.

4. Findings and discussion

The case studies analysis was fundamentally oriented to identify the current form of PMS in large manufacturing companies, the senior and middle manager's knowledge regarding effective PMS and characteristics that should PMSs meet according to their opinion in the future. The main findings are summarized for higher clarity in Table 1. First the attention was paid to the factors that the most affected performance of investigated companies nowadays. Based on the results analysis it can be stated that only with one factor agreed except one all case companies, this is human resources and their effective management. The other factors that companies indicated are different. This result would have been very positive because also theory and many research studies identify employees as a major factor in the business performance (Kaplan, Norton, 1996, Truss a Gratton, 1994). If it had not become clear in the following questions that the managers recognize the importance of this factor but it is not reflected in their PM systems.

To be able to outline the current practice of case companies in performance management it is necessary to find out the particular tools and concepts that they use. The approaches to the performance management can basically be divided to traditional ones focused on the financial indicators, modern ones including the performance analysis by means of creation of values for shareholders (concepts like EVA, MVA, CFROI) and comprehensive ones that are strategy oriented and emphasize use of non-financial indicators (BSC, EFQM, Performance Prism, etc.). Within the analysed cases only two companies use strategic PMS Balanced Scorecard, the rest of companies' measure and manage their performance based on a set of mainly financial KPIs or ratio indicators only. This fact also confirms question devoted to key financial and non-financial indicators that the companies currently for performance measurement use.

From the Table 1 we can see that the companies measure wide range of financial indicators from ratio measures to ROI, ROCE, EVA or cover contribution. However, it is now recognized that traditional financial measures are no longer sufficient for understanding performance in a dynamic business environment, as it encourages short-termism leading to a lack of strategic focus and failure to provide data on quality (Kagioglou et al., 2001, Robinson et al., 2005). The qualitative measures are far less integrated in PMS of case companies. Those who implemented BSC focus on customer and employee satisfaction, process analysis and operational performance. The rest companies usually measure mainly complaint rate and productivity. The interviewed managers also stated that just these indicators that are in their company using to performance management are the most important.

In order to be able to speak about an effective PMS, it has to fulfil specific roles in the company. Lima, Costa et al. (2010) set on the basis of experts interviews and a Delphi experiment eight PMS roles. Also other scholars created list of roles that should PMS in the company perform (Franco-Santos et al., 2007, Micheli, Manzoni, 2010, Gimbert, Bisbe and Mendoza 2010). The major PMS roles according to above mentioned authors are: strategy implementation and revision, provide alignment, measure and evaluate performance, monitor progress and is tool for internal communication and motivation. When we compare the findings of the case studies analysis with theoretical basis from literature review we can say that PMS currently fulfil only a few functions, mainly controlling and planning ones. This fact is necessary to interconnect with the characterization of the relationship between performance measurement and strategy. Here the managers argue that this relationship is fundamental and that performance measurement is consistent with the strategy. Half of them even say that PMS is used as tool to monitor, evaluate and review the strategic objectives and activities. For second half of companies PMS mainly perform the role of comprehensive overview of business operations. In these companies was not possible clearly identify how exactly strategy affect the performance. Only in two companies managers stress the PMS function related to assessment and motivation of employee. Here and in previous question we see that the current PMS still do not adequately integrated measures of HR performance and management.

Interesting findings are provided by cross analysis of two last questions with question regarding weaknesses of current PMS. We can state that only in one case the manager see the need to modify the PMS system in the structure of performance measures, particularly in addition of measures related to HR area and process analysis. In two cases the managers see the weakness of current PMS in the area of how measures are defined; that they provide subjective evaluation and have low explanatory rate as well as the system is too complicated on data collection. The half of cases companies considers the PMS system as sufficient and do not fell the necessity to modify them.

Table 1. Key findings of case studies analysis

Company	Factors affecting performance	Current framework	Weaknesses, modification of current PMS	Relationship between performance and strategy	Roles of PMS	Used Indicators		The most important indicators	Characteristics of PMS	Components of effective PMS	Aspects of successful performance management
						Quantitative	Qualitative				
Alfa	employee, equipment, timeliness of information	ratio indicators, level of social subsystem	not required	PM is consistent with strategy	controlling	ratio indicators, proportion of value added and sales,	indicators related to social subsystems	the same as used indicators	accuracy, reliability, real-time information.	software, reliable employees	trending, preparation of ambitious but realistic plan
Beta	stability of financial markets, prices of input sources, stability of purchasing power	consists of KPI and "smart" objectives	not required	PM is consistent with strategy	objectives unification, evaluation and reviewing of strategic objectives and activities	ROE, ROA, ROI, ROCE, MVA, CFROI, production costs	production efficiency and flexibility, complaint rate, customer satisfaction	the same as used indicators	compliance with a global corporate vision	reduction of external and internal complaints, human resources	strengthening the monitoring of ongoing strategic goals achievement
Gamma	stakeholders, business partners relationship, the market situation, HR	Balanced Scorecard	subjective evaluation, lower explanatory rate, constant modification	PMS is consistent with strategy	comprehensive overview of business operations, analysis of past results and prediction of future needs	days sales outstanding, days payable outstanding, net invested capital, ROITC, ROA, ITO	operational performance, communication, management support, customers and employee satisfaction	DSO ROIC inventory turnover, profit	complex PM, complete and clear information for stakeholders, PM at all hierarchical levels	IT technology, trained staff, unbiased and comprehensive data, well set frequency of measurement	simplicity and clarity, easiness of PM, engagement of all hierarchical levels
Delta	instructions from Group management, logistic, HR management in production,	comparison of KPI results	misrepresentation of measures, complicated system of data collection, better software	fundamental, e.g. acceptance of WCM method	controlling, assessment and motivation of employees	standard financial indicators (costs, inventory turnover, loss in production)	productivity, quality, number of products, comparison of plan and reality	financial indicators, inventory turnover	clarity, simplicity of implementation, comparability of measures	software	correct information about processes, HR management, simplicity of PMS
Epsilon	investments in technology and human resources	Balanced Scorecard process analyses,	emphasis on cost reduction, few measures related to HR issue, inaccuracy in defining the processes	PM is consistent with strategy	controlling, basis for decision making and planning	ratio indicators, EVA, working capital, cover contribution	customer and employee satisfaction, analysis of the HR, process analysis	EVA, ROA, productivity, ratio indicators	clearly defined structure of KPI and their target values, clarity, measurability, effectiveness.	financial and nonfinancial indicators	clearly interpreted results, modelling, timeliness and quick outputs
Zeta	stability of financial markets, legislative requirements, HR	financial KPI, controlling, process management	not required	PM is consistent with strategy	controlling, planning, assessment and motivation of employees	EBITDA, cover contribution, sales, investment, inventory,	productivity, the number of complaints, quality	EBIT, cash flow, working capital,	measurability, long-term, clearly, simply defined PM, motivational parameters	financial and nonfinancial measures	realistic objectives, ability to motivate, simplicity and clarity

These findings are already referred to the second point of view of case analysis related to characteristics, components and aspects that have to be met in the future to design successful PMS. The components of PMS stated by managers could be groped into three groups: combination of financial and non-financial measures, IT technologies and software and well trained employees. Unfortunately some important components that stated literature were not mentioned by managers. For example the main components that state Otley (1999) and have been already outlined in literature review. Furthermore Lebas (1995) states that PMS should also include a component that will continuously check the validity of the cause-and-effect relationships among the measures.

In the area of characteristics that should have properly functioning PMS and aspects of successful performance management we can discover some significant similarities. Here we can confirm relatively high compliance. The managers see the room for improvement in creation of simple and clear performance system that strengthen the monitoring of strategic goals and actions achievement as well as instrument for employees motivation. When we compare these findings with literature we have to say that some important characteristics of effective PMS were not mentioned. Some of them highlight Maskell (1991) as the changing nature in measurement initiatives; measures should be conceived as part of fast feedback management systems; and measures should be designed for stimulating continuous improvement capability rather than simply monitor operations strategy. Although a strategic management function is identified in the implementation of performance measurements, a specific role could be related to continuous improvement capability development. Another characteristics define Kennerly and Neely (2000): the measures have to provide a 'balanced' picture of the business, the performance measures should be multi-dimensional, the performance measurement matrix (PMM) provides comprehensive mapping, and the performance measures should be integrated across the organization's functions and through its hierarchy and the PMS should provide data for monitoring past performance and planning future performance. It implies the indicators should measure both results and the drivers of them. To summarize we have to confirm that most of them are not met in the current practice of large size manufacturing companies.

5. Conclusion

The conducted research study confirms that in the case companies still the proportion of financial and non-financial measures embedded in performance measurement systems is not suitable. The fact that in performance measurement practice of Czech companies still prevail management based on financial indicators also confirm other authors Fibirova (2007), Kral et al. (2007) or Skodakova (2009). Even though the managers have already recognized the importance of factors as strategy, human resources and internal processes analysis on business performance they are still not adequately reflected in their performance management systems. As pointed out by Cumby and Conrod (2001), sustainable shareholder value is driven by non-financial factors, such as customer loyalty, employee satisfaction, internal processes, and an organization's innovation. Hence, nowadays could be seen increasing emphasis on forward-looking non-financial measures.

On the other hand although the managers evaluate in most cases their current PMS as frameworks that provide a succinct overview of an organization's performance, they also identify some imperfections and rooms for future improvements. This fact could be seen as promising starting point for future development of performance management systems in practice. Recently broad spectrum of measures is required in order to provide data not only on financial success, but also on quality, responsiveness and flexibility, just to mention a few. This need must be balanced with the concern to avoid information overload and to keep the system as simple as possible.

The limitations of the presented research study results from the small number of case studies on which the findings are based. The results are therefore tentative and should be viewed with caution. Thus, further research has to be conducted to deepen, more specify and verify the findings also on other types of organisations.

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