# FRAMEWORK OF PERFORMANCE MEASUREMENT SYSTEM FOR CZECH SMALL BREWERIES

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## Abstract

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In spite of increasing interest on performance measurement systems during last 30 years, there is not visible any significant deviation from widely used financial measures in Czech business environment. These are generally criticized on account of several reasons: lag information content, bad fitting with information age competition and difficult communication to employees. Shift from the financial perspective to the non-financial one within the performance management invoked genesis of different performance measurement systems. The aim of this paper was therefore to establish the status of current knowledge in the area of performance measurement systems for small and medium enterprise. This theoretical phase of the research was based on the study of up-to-date reviews and it focused on the description of the most recent performance measurement systems. Further after considering Czech business specifics suitable base for performance measurement system was chosen and the framework of whole performance measurement system not dissimilar to Balanced Scorecard was designed. After considering the circumstances of the micro-brewing segment in the Czech Republic this article resulted in designing an example system suitable for usage among Czech micro-breweries.

performance measurement system, financial measures, non-financial measures, performance management

Changes in the entrepreneurial environment put new demands on the performance management frameworks. Nevertheless, the primary mission of the managers remains unchanged – take such decisions, which lead to firm valuation. For employees is this idea easy to understand, but difficult to fulfil, especially in terms of financial measures. This is one of the factors that have led to increased interest on performance measurement system (PMS) during last 20 years. There is visible the evolution from a financial perspective to a non-financial perspective in the focus of these systems.

When evaluating the economic situation of a firm, especially in the conditions of Czech Republic, it is very often used the apparatus of financial analysis. Financial analysis applies analytical tools and techniques to financial statements and related data to derive estimates and inferences useful in business decisions. A financial analysis assists in identifying the major strengths and weaknesses of a business enterprise. It indicates whether a firm has enough cash to meet its obligations, an efficient inventory management policy, sufficient plant, property and equipment, and an adequate capital structure – all of which are necessary if the firm is to achieve the goal of maximizing shareholder wealth. Nevertheless sometimes these inferences suffer from inconsistency. The apparatus of financial analysis consists of several groups of financial measures and techniques, whose mutual connections are often forgotten. This can lead to conflicting conclusions without identifying the factors of financial development. Moreover some important areas of business economy stay beyond the interest of financial analysis.

Generally the financial measures are criticized on account of several reasons. One of the most often mentioned drawback is lag information content of these indicators. According to Eccles, R. G. (1992) a primary reason why traditional measures fail to meet new business needs is that most measures are lagging indicators. The emphasis of accounting measures has been on historical statements of financial performance. They are the result of management performance, not the cause of it. As a result, they easily conflict with new strategies and current competitive business realities. Another handicap of financial measures is that they may not fit well with the new business environment. According to Kaplan, R. S. (1996) the industrial competition is shifting to information age competition. This is connected with the growing importance of intangible assets that are not easy to valuate within the traditional accounting model. Ideally, this financial accounting model should have been exploded to incorporate the valuation of company's intangible assets (high-quality products and services, motivated and skilled employees, satisfied and loyal customers), since for information age companies, these assets are more critical to success than traditional physical and tangible assets. Another disadvantage of the financial measures lies in a difficult communication to employees. Evaluating performance system must be understandable for all levels. Front-line employees must understand the financial consequences of their decisions and actions as well as executives must understand the drivers of financial success. That is why it is necessary to complement the financial measures with the non-financial ones and create system derived from a top-down process and simultaneously driven by the strategy of the firm. Theory of business economics offers in this context more complex tool of business diagnosing. Synek (2003) speaks about economic analysis that describes as a process of monitoring of an economic complex, its decomposition into the particular components with intention to identify the factors leading to higher efficiency of the firm. Economic analysis is thus seen as a broader tool of business management than financial analysis, because it expands the set of business unit objectives beyond summary financial measures.

## Aim and methodology

The intention of research, this paper is a part of, is to design a performance measurement system incorporating financial as well as non-financial measures with respect to the specifics of Czech brewery segment. The part of the research presented in this paper focuses on determining the frame of this complex tool for managing the business performance with respect to the specifics of small and medium breweries in the Czech Republic. Finally a performance system suitable for Czech micro-breweries is designed.

The paper falls into two phases: analysis of the literature and identifying the base for PMS suitable for Czech conditions. The literature survey is integrated to establish the status of current knowledge in the area of PMS for (Small and Medium Enterprise) SMEs. This theoretical phase of the research is based on the study of up-to-date reviews and it focuses on the description of the most recent PMSs. The second phase of the paper focuses on the establishing of the framework of suitable PMS with respect to the specifics of Czech brewing sector. First the suitable base is identified, after that the architecture of the model is designed.

## Performance measurement systems research

Shift from the financial perspective to the non-financial one within the performance management invoked genesis of different performance measurement systems. According to Neely (2002) a PMS is a balanced and dynamic system that is able to support the decision-making process by gathering, elaborating and analysing information. The concept of PMS was developed in response criticisms that traditional performance models are focused on financial measures, are historically oriented and do not cover all of the business areas. According to many scholars a well designed PMS should by using different kinds of measures represent whole organization. The balance approach offers by tying together various measures a holistic organizational view.

Interest on performance measurement management has started to increase in the 80s of the last century. Since then numerous of PMS models were developed and consequently theoretical (and very little empirical) research on PMSs has been carried out. The literature surveys tried to sort the particular models according to different criterions, such as attitude to firm's strategy, focus on stakeholders, balance, dynamic adaptability, process orientation, casual relationships or simplicity (Garageno *et al.*, 2005). According Toni and Tonchia (2001) the main models of PMSs can be referred to following typologies: hierarchical/vertical (cost and non-cost performance measures on different levels of aggregation), balanced scorecard/tableaux de board (several separate performances are considered independently), internal and external performances.

As our research focuses on performance management in small and medium-sized enterprises only those reviews concerning SME were taken into account. Garengo *et al.*, 2005 focused their review on eight PMS models developed after the mid-1980s. The models considered were six of the most popular generic models and two PMS models designed specifically for SMEs. They focused on following models: *Performance Measurement Matrix* (Keegan *et al.*, 1989): According to Garengo *et al.* (2005) and Neely *et al.* (2000) this model uses the matrix combining the non-cost and cost perspective with external and internal perspective. The model is balanced

and simple, for which it is sometimes criticized. *Performance Pyramid System* (Lynch and Cross, 1991) is designed as a pyramid with several levels linking the firm's strategy, business units and operations. *Results and Determinants Framework* (Fitzgerald *et. al.*, 1991): This model focuses on searching the relationship between the entrepreneur's results expressed in terms of competitiveness or financial performance and determinants of these results such as quality, innovations and flexibility. *Balanced Scorecard* (Kaplan and Norton, 1996): 4-box approach to performance measurement. In addition to financial measures, managers are encouraged to look at measures drawn from three other perspectives of the business: learning and growth, internal business processes and customer. The model is balanced and belongs to the most popular models both in the literature and in practice. *Integrated Performance Measurement System* (Bititci *et al.*, 1997), who defined it as the information system by which the company manages its performance in line with its corporate and functional strategies and objectives, it is based on four levels. According to Hudson *et al.* (2001) this model fails to provide a structured process that specifies objectives and timescales for development and implementation. *Performance Prism* (Neely *et al.*, 2000). According to Garengo et al. (2005) this model is three-dimensional, in correspondence with its name a prism graphically represents the architecture of the model. *Organizational Performance Measurement* (Chennell *et al.*, 2000), which was designed exclusively for SMEs. Is based on three principles (alignment, process thinking, and practicability) and is balanced. *Integrated Performance Measurement for Small Firms* (Laitinen, 2002). Within the model the internal dimension monitoring production process and the external dimension monitoring the competitive position are causally likened.

Hudson *et al.* (2001) evaluated ten PMSs. In contrast to Garengo *et al.* (2005) they included 4 different PM approaches. In addition to Garengo's selection following models were considered: *Integrated Dynamic PMS* (Ghalayini *et al.*, 1997) which focuses on ensuring fast and accurate feedback. *Integrated PM framework* (Medori and Steeple, 2000) which is criticized for being complicated to understand and use. *Integrated Measurement Model* (Oliver and Palmer, 1998) defines the dimensions of performance and offers a mechanism for designing the measures. And finally *Consistent PM Systems* (Flapper *et al.*, 1996) which is being criticized for weak balanced approach for critical dimensions of performance.

The common conclusions of the latest reviews show that there is a difference between models for big companies and models for SMEs. According to Garengo *et al.* (2005) most of the SMEs models are characterized by increasing strategy alignment, while continuing to focus on the most critical aspect for SMEs, i.e. operational aspects. Further all models are balanced, which is particularly important and which makes these models different form the traditional financially oriented ones. Finally clarity and simplicity characterize the most recent models.

## The basis of performance system in Czech conditions

For centuries, economists have reasoned that for a firm to create wealth it must earn more than its cost of debt and equity capital – this principle is in the microeconomic terminology titled 'creating the economic profit'. A good financial performance measure should ask how well the firm has generated operating profits, given the amount of capital invested to produce these profits. In recent years the Stern Stewart & Company has operationalized this concept under the label Economic Value Added. EVA is defined as a spread between the return on capital invested and the cost of capital invested. It describes the ability of the firm to create the economic profit. Contrary to the traditional performance metrics, EVA manages to reflect real costs of the firm because it takes note of the equity costs as well as the other costs of the firm. The EVA metric is based on a simple and straightforward notion, as described in the following equation[1]:

$$EVA = NOPAT - Capital \times WACC, \qquad (1)$$

where:
*NOPAT* .... Net Operating Profit After Taxes
*Capital* ...... Capital Employed to Generate Operating Profit
*WACC* ..... Weighted Average Cost of Capital.

The components of EVA are not directly obtainable from the financial statements, as EVA concept works with items referring entirely to operating activity. The EVA authors define operating activity as those operations that serve the basic entrepreneurial purpose. It is therefore necessary to convert the accounting data; under the Czech accounting rules, the "operating profit" and the corresponding capital include activities that are not directly aimed at fulfilling the basic entrepreneurial purpose – such as the investing of temporary free operating financial asset into the securities or creating constructions in progress (neither contributes to current operating activities). On the other hand, other activities necessary for meeting the basic entrepreneurial purpose of the firm are not covered under the operating profit and capital. The most important ones include financial and operative leasing, as well as capitalization and amortization of certain marketing costs, research and development costs, unrecorded goodwill, etc.

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1    (Source: Maříková, 2001)

Similar to many accounting innovations, the concept of EVA promises better performance measurements, incentive schemes and equity valuation. The concept behind EVA is quite simple – maximize the spread between the return on capital used to generate profits and the costs of using that capital. Through its adoption, corporate executives hope that EVA will lead to increased efficiency in the allocation of all assets and hence increased shareholder wealth. In fact, Stern Stewart & Company has advocated that EVA can be used instead of earnings or cash from operations as a measure of performance. They claim that: "Eva is almost 50 % better than its closest accounting-based competitor in explaining changes in shareholder wealth" (Stewart, 1994), or "Forget EPS, ROE and ROI. Eva is what drives stock prices" (Stewart, 1995).

Though from the theoretical point of view EVA is seen as a superior performance metric, the results of some empirical studies do not support this claim. Numerous researchers have looked into the effectiveness of EVA using the independent empirical evidences (for instance: Biddle, Bowen, Wallace (1997); Turvey, Lake, Duren, Sparling (2000); Feltham, Issac, Mbagwu, Vaidyanathan (2004); Bacidore, Boquist, Milbourn, Thakor, (1997); Berenstein (1998); Kramer, Pushner (1997)) and did not indicate the superiority of EVA among other financial measures. Nevertheless, among both the Czech academic researches and practical financial analysts the usage of EVA is still limited because of the low empirical evidence of the behaviour of EVA within the Czech economy. A critical point of this research in the conditions of Czech economy is a lack of data about publicly trading companies, which at the same time, serve as an exogenous criterion for assessing the quality of the examined measure in the mentioned studies.

One of the most often claimed characteristics of EVA is its capability to inform owners about the creation of shareholder value, which could be in general described by the performance of capital market. In 2010 was carried out a study focusing on the relationship between ability of Czech firms to create economic value and performance of Czech capital market (Chmelíková, 2010). The research question was, whether performance metric EVA describes creation of shareholder value of the firms in the Czech Republic. The answer was found in the relationship between EVA and behaviour of capital market. As the development of these two categories proceeded in the same way it could be concluded, that EVA metric, with respect to its theoretical background, can be used as measure of shareholder wealth creation of the Czech firms. The behaviour of capital market was described by the stock exchange index PX. The official index of Prague stock exchange is currently the index PX, which is being the successor of the oldest Prague index PX 50. The index's values are published daily, which is in contrast to the information about creation of economic value added by firms in Czech Republic

that are shown on year basis. This invokes the need to characterize the performance of capital market on the annual basis by using simple arithmetic average of daily index. Ministry of Industry and Trade of the Czech Republic monitors the creation of economic value added among the industry and construction firms in the Czech Republic. This analysis covers vast majority of all business in this sector (about 90 %). Despite the number of business in this study is fluctuating in dependence on the number of currently operating firms, the trend of EVA development is well observable and enables the comparison with the development of capital market performance. The progress of these two categories indicated a general positive correspondence between the development of capital market performance and creation of economic value added among Czech firms. The regression results demonstrated high value of coefficient of determination $R^2$, which gets to relatively high level of 0.83. This result is also supported by the research of the relationship between Economic Value Added, traditional performance measures (Return on Assets 'ROA' and Return on Equity 'ROE') and their ability to measure the creation of shareholder wealth of food-processing firms in the Czech Republic (Chmelíková, 2008). The intent of this research was fulfilled by providing a simple regression test of the hypothesis, that the EVA measure is more associated with improved shareholder wealth than traditional performance measures ROA and ROE. The results of regression analysis indicated in all cases a positive correspondence between EVA and financial performance metrics and show higher quality information content of EVA indicator in the relationship to the ability of shareholder wealth creation than traditional performance measures. This fact supports the tested hypothesis as well as the conclusions of corporate finance theory, that from the theoretical point of view EVA is seen as a superior performance metric. The results suggest that EVA should be considered when measuring performance of Czech-food processing firms and can become a basis of economic analysis in this sector.

When analyzing a firm current theory and praxis usually use three types of systems of measures: parallel systems, pyramidal systems and rating and bankruptcy indexes. Parallel systems concentrate measures into the groups according to the particular business areas. The advantage of this approach lies in the rich theoretical background and in the correspondence with functional structure of the firm. On the other hand the disadvantage is poor interconnection between particular groups of the system that leads to complicated interpretation of the results. Rating and bankruptcy indexes offer undemanding computative procedure unfortunately accompanied with rough information content of the results without identifying factors of the firm's efficiency. The advantage of pyramidal systems lies in the reflection of mutual

interconnections between particular parts of the system with straightforward linking between the individual indicators and synthesis measure. On the other hand the pyramidal systems suffer from poor theoretical background and impose higher requirements on the analysts' qualification. The consequence is low popularity among financial analysts. Neumaierová (2008) claims, that current praxis prefers parallel evaluating systems. This is in contrast to the character of current situation, which is noted for high dynamical complexity due to the globalisation and rather than parallel systems of indicators requires the pyramidal ones. The keystone of pyramidal concepts is the involvement of interconnections between particular indicators, which makes these concepts the most compatible with the new environment. The basic principle of pyramidal system is decomposition of a top indicator with intention to identify the influence of its partial factors, when simultaneously the links between particular measures are represented by mathematical equations.

Enrichment of classical pyramidal system of any financial metric with the non-financial measures will offer a measurement system not dissimilar to the Balanced Scorecard. The Balanced Scorecard is a widely adopted performance management framework first described in the early 1990s through the work of Robert Kaplan and David Norton (1992). Since then, the concept has become well known and its various forms widely adopted across the world. By combining financial and non-financial measures in a single report, the Balanced Scorecard aims to provide managers with richer and more relevant information about activities they are managing than is provided by financial measures alone. It is a performance management tool that enables a company to translate its strategy into a tangible set of performance measures. A Scorecard has to tell the story of a firm's strategy and the story is told by means of cause-and-effect model that links all the measures to the creating of shareholder value. The scorecard provides a view of a firm's overall performance by integrating financial measures with non-financial measures. This helps to manage the activities that stand beyond the control of financial measures in the framework of a holistic management system and overcomes the main disadvantage of pure financial analysis, which suffers form historic character of its information. The Balanced Scorecard contains a mix of leading and lagging indicators: Lag indicators represent the consequences of actions previously taken, while lead indicators are the measures that lead to the results achieved in the lagging indicators. Lagging indicators without performance drivers (usually described in non-financial terms) fail to inform managers of how to achieve the results. The authors of Balanced Scorecard Norton and Kaplan (1996) claim that: *The balanced Scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial age companies for which investments in long-term capabilities* *and customer relationships were not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation.*

Balanced Scorecard is designed as a simple, 4-box approach to performance measurement. In addition to financial measures, managers are encouraged to look at measures drawn from three other perspectives of the business: Learning and Growth, Internal Business Processes and Customer. The power of the framework comes from a fact that it goes beyond an ad-hoc collection of financial and non-financial measures. Despite the apparent shortcomings of financial measures, a well-constructed Balanced Scorecard is not complete without them. Scorecard practitioners recognize this fact, and consider financial measures to represent the most important component of the Scorecard. Niven (2006) claims, that *by using the Balanced Scorecard an organization has the opportunity to mitigate, if not eliminate entirely, many of the issues related to financial measures.*

In building the scorecard, the process is just as important as the content. A scorecard devoid of process will be sterile and fail to mobilize both the executive team as well as the operational employees. To build a Balanced Scorecard for a specific company is a task for its whole executive team, since it is necessary to have specific information from all company's divisions. The choice of portfolio of non-financial measures depends on the character of a company. In order to be able to design a framework for economic analysis it is therefore necessary to specify at least the sector, or better a segment for future application. For this purposes the segment of microbreweries form the brewing sector of the Czech Republic was chosen.

### The brewing sector in the Czech Republic

The brewing sector in the Czech Republic belongs to the most important agrarian business in the Czech Republic. Besides its long tradition (the first record of beer brewing in the Czech territory dates back to the year 993 and actually beer consumption per capita (158 litres per year) is the highest in Europe) it generates according to study of Ernst and Young (2009) nearly 7400 jobs directly in breweries and almost 12 300 jobs in the supplying sectors. Although this represents only minor part of all jobs in the Czech Republic, the industry represents an important factor in the local economic development, providing employment for relatively less skilled labour in the regions. Moreover in the hospitability sector approximately 32000 jobs can be attributed to the brewing sector while in retail around 2800 employees have jobs related to beer sales. These numbers also represent pretty benefits for the state budget from this sector. According to the Ernst and Young calculations (2009) the government revenues due to the production and sale of beer exceed actually to 676 million euros,

which create approximately 1.7 % of the state budget in 2010.

There are 48 breweries in the Czech Republic and approximately 90 microbreweries. Despite the micro-brewing segment covers only approximately 0.5 % of total beer production in the Czech Republic, the growth of this segment is enormous. According to Hospodářské noviny (26. 3. 2010) there was in 1990 only one microbrewery in the Czech Republic, in 2006 the Czech Beer and Malt Association registered about 60 of them and it expects the number of these will exceed 100 in year 2010. Growth rate of this segment as well as the local character of this production are encouraging interest among researches and developing of economic analysis model for this segment is also a consequence of it.

### The framework of performance system of microbreweries

Despite the apparent shortcomings of financial measures, it is not possible to construct the economic analysis without them. These even represent the most important component of it. The results of above analysis identified performance measure Economic Value Added as basis for economic analysis of the firms form food-processing sector in the Czech Republic.

The basic principle of pyramidal systems is decomposition of the top indicator in order to identify and quantify the influence of its particular components. When designing the decomposition of EVA it is suitable to rewrite the equation no. 1 in the following way:

$$EVA = \frac{NOPAT}{SALES} \times \frac{SALES}{CAPITAL} - \frac{WACC}{CAPITAL} , \qquad (2)$$

where all the abbreviations stand for the same items as in equation 1. This alternative expression of EVA measure determines three basic branches of its pyramidal decomposition. The managers can use three ways how to drive the value of the firm:

● through increasing the profit margin (*NOPAT/SALES*),
● through increasing the turnover of total assets (*SALES/CAPITAL*),
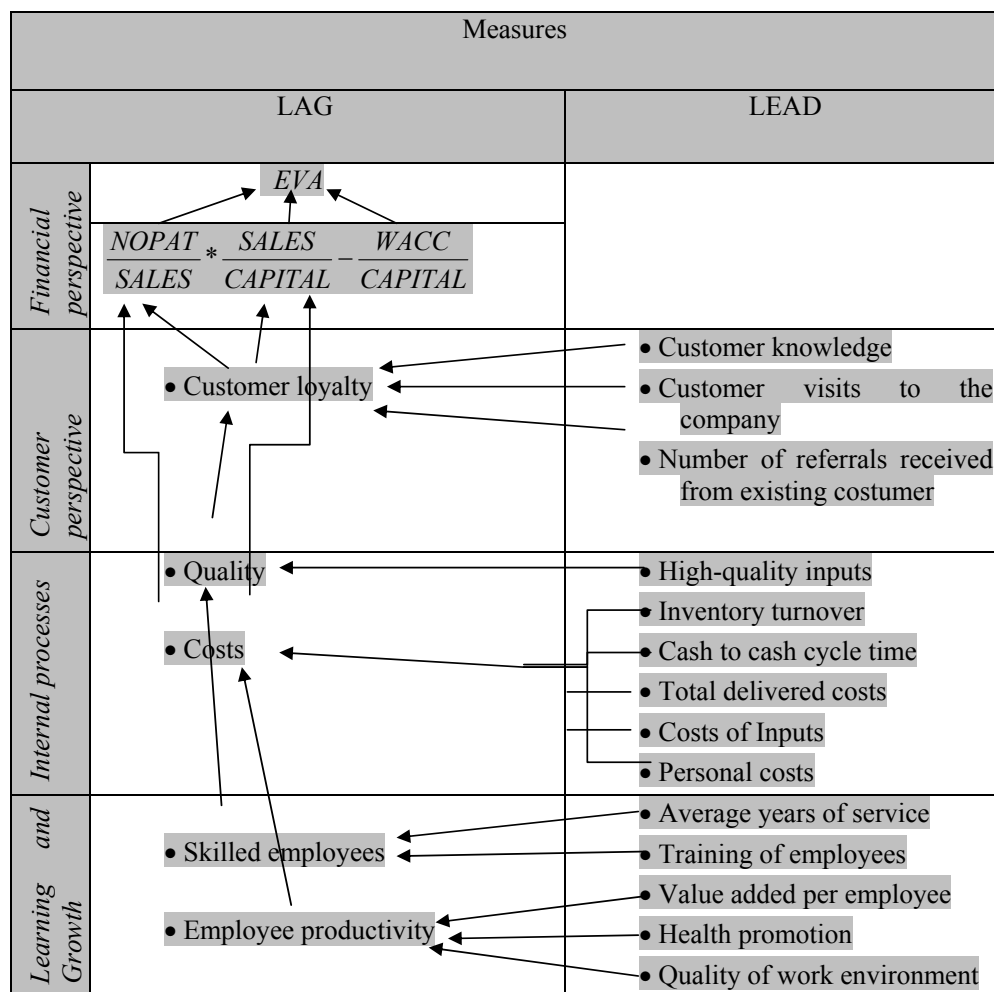


1: *Framework of economic analysis in the micro-breweries*

- through decreasing the riskiness of the firm (*WACC/CAPITAL*).

These free common financial measures represent in the framework of economic analysis the group of lag indicators, that are the consequences of actions previously taken. But the managers are also interested in the question what are the lead indicators, what are the measures that lead to the results achieved in the lagging indicators? The framework of economic analysis should therefore contain a mix of leading and lagging indicators. Lagging indicators without performance drivers fail to inform of how to achieve the results. Conversely, leading indicators may signal improvements, but on their own they do not inform whether these improvements are improving the shareholder wealth.

Further EVA decomposition should therefore include also the lead measures, of which usage challenges leaving the financial perspective. Before incorporating the non-financial measures, one should first more specify the character of micro-brewing segment in the Czech Republic. For the micro-breweries according to Maier (2009) are typical following characteristics: shipping does not exceed 5 000 hl/year, they have not a distribution network of its own, most of production is usually consumed in its own facility-restaurant, they do not export, the owner is usually a natural person or smaller legal entity, owner's relationship to the given sector is not only economic but also emotional. The quality of beer is believed to be the highest among other national brands and this fact is also connected with relatively higher selling price. This knowledge enables to design a framework of economic analysis suitable for business operating in this segment. An example introduces the picture 1.

## CONCLUSION

According to both scholars and practitioners balanced top down approach is important for the successful managing of the firm, small firms are not excluded. Garengo *et al.* (2005) showed that even though the literature highlights the importance of using PMS in small companies, very few firms carry out performance management. They see basically two main obstacles to introducing PM in small firms – the lack of financial and human resources and the perception of PMSs as bureaucratic system that cause rigidity. As these obstacles were kept on mind when designing PMS suitable for small breweries, the clarity and simplicity characterize this model.

The framework of economic analysis built on the basis of Balanced Scorecard with the main performance indicator Economic Value Added represents from this view suitable tool for managing of Czech firms. No one pretends this is generally applicable for all microbreweries in the Czech Republic, nevertheless this procedure can be instrumental when building economic analysis framework in any micro-brewery.

Since this model was built solely on theoretical basis the next step in this research project is its empirical verification. This is also in accordance with the literature which claims that there is a significant gap between theory and practice. On one hand many PM models have been proposed but on the other hand very little empirical research has been carried out. In order better to understand the process performance measurement further empirical studies on this field are necessary.

## SUMMARY

In spite of increasing interest on performance measurement systems during last 30 years, there is not visible any significant deviation from widely used financial measures in Czech business environment. These are generally criticized on account of several reasons: lag information content, bad fitting with information age competition and difficult communication to employees. Shift from the financial perspective to the non-financial one within the performance management invoked genesis of different performance measurement systems. The aim of this paper was therefore to establish the status of current knowledge in the area of performance measurement systems for small and medium enterprise. This theoretical phase of the research was based on the study of up-to-date reviews and it focused on the description of the most recent performance measurement systems. Further after considering Czech business specifics suitable base for performance measurement system was chosen and the framework of whole performance measurement system not dissimilar to Balanced Scorecard was designed. After considering the circumstances of the micro-brewing segment in the Czech Republic this article resulted in designing an example system suitable for usage among Czech micro-breweries. Since this model was built solely on theoretical basis the next step in this research project is its empirical verification. This is also in accordance with the literature which claims that there is a significant gap between theory and practice. On one hand many PM models have been proposed but on the other hand very little empirical research has been carried out. In order better to understand the process performance measurement further empirical studies on this field are necessary.

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