DETECTING CRISIS STATES IN THE TRANSPORT COMPANY THROUGH COST ANALYSIS

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ABSTRACT

This report focuses on the costs and in particular on their research and analysis as a key tool to detect critical situations in the enterprise. In terms of market uncertainty and under the current global financial and economic conditions, the managers having interest in the positive development of the company need complete, accurate and objective economic information relating to its business activities. The dynamic changes in business environment require continuous monitoring and analysis of various aspects of the enterprise. In such circumstances, the issue related to costs and their reporting, analysis and management is too topical. The present article discusses an analytical tool for cost analysis as a combination of different approaches and methods that the managers from practice may apply within the process of monitoring and exploring costs incurred in the company. The results obtained from such an analysis can be an indicator to identify the symptoms of a critical situation and a potential forthcoming crisis.

Key words: Analysis, crisis, costs, decision-making in costs management

INTRODUCTION

Regardless of the stage of its development, every company strives to adapt to the conditions of the external economic environment. The purpose of this adaptation is to achieve a balance between company's internal characteristics and those of the dynamically changing business environment. The absence of such a balance between the internal and external environment causes risks of organizational, production and financial crises. In this regard, managers are faced with the responsible task to forecast

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and overcome the potential risks and concomitant crisis states within company's functioning.

In times of market uncertainty, and even more in the current global financial and economic crisis started in 2007-2008, managers interested in the development of company need a complete, accurate and objective economic information about its business. The availability of Information is a very important prerequisite to minimize risks when making management decisions. The dynamic changes in business environment require constant monitoring and analysis of various aspects of the enterprise. Within such conditions, the problems related to reporting, analysis and management of costs are extremely topical. This stems from the fact that the prime objective of any business organization is to achieve financial results that will ensure its normal operation. A major component directly connected with the formation of financial result are costs.

This report aims to provide appropriate analytical tool as a combination of various methods for study and analysis of costs. It could be successfully used by the management in monitoring and comprehensive analysis of the costs incurred by the company. As a result of this, the symptoms of a critical situation and eventual subsequent occurrence of company crisis can be detected.

1 COMPANY CRISIS AND COSTS - CHARACTERISTICS AND RELATIONSHIPS

The contemporary economic conditions are characterised by the fact that each company is exposed to a potential crisis. The term corporate crisis stands for the occurrence of a crucial moment in the functioning of the company when an unsustainable situation endangers its priority goals.

According to Yarnich, from the viewpoint of the business a crisis is "*a period of instability, a situation when considerable changes are coming up ... it is unambiguously that every crisis is a threat to the company*" [1]. A company that falls into crisis meets difficulties in achieving its objectives. Within this crisis *"company's stability fails which could lead to bankruptcy"* [2].

Inasmuch as "the crisis is a sudden and constant change causing an urgent problem" [3], it requires an immediate action to preclude the occurred difficulty. Every manager whose company is faced with a critical situation should react quickly to reduce the damage - loss of money, waste of time, public image. The main causes for occurrence of a crisis situation in the enterprise are related to the threats arising from the uncertainty of the external and internal business environment. External causal factors could be: macroeconomic instability, international factors, technological factors. There is a blend of Internal causal factors, for instance: incorrect product-market solutions, wrong investment, ambiguous strategic decisions, inadequate policy of the company in terms of the staff; inadequate operational management.

Owing to the fact that a company's crisis is a highly undesirable phenomenon, it should be diagnosed opportunely in order to put in place relevant measures for its overcoming. The ability of company to cope with negative phenomena largely depends on its ability to operate in various crisis situations as effectively as possible.

One of the principal means by which it can be established if a crisis situation exists is the monitoring and analysis of costs. To this end, it is necessary managers to predict and reduce the potential risks associated with them and possible crisis thereof.

It is known that the costs arise with the inception of enterprise and are concomitant to all stages of its development. That is why the economists over decades "develop the theory of costs as an important component of business and strive to manage and control them with purpose of making appropriate (bold by the author) management decisions for the future development of enterprises" [4]. Based on cost data (classified by various characteristics) managers can make decisions related to planning, controlling and optimizing the operation of the enterprise. As far back as 80's of the last century, American scientist and economist M. Portar [5] states his basic business strategies considering costs as the main criterion for their construction. Such a meaning of the costs is dictated by the fact that they are a specific indicator of the degree of efficiency of resources usage that are at disposal of the enterprise.

Costs are the main component which the financial results of the company depends on. And as "profit is the price of survival" [6] today costs are subject to a special attention. The profit is the resultant of the sales volume multiplied by the price minus costs. The links between these three components are simple and inevitably lead to the conclusion that during the crisis they should be monitored in their totality. But as managers are not always able to control the volume of sales and price (they are driven rather by external market factors) the most important component which can be influenced are the costs.

If a company has to be prevented from falling into crisis its managers have to opportunely detect critical situations caused by incurred costs and put in place adequate measures to immediately eliminate the existing problems. This can be connected with the reduction of production or administrative costs, reduction of the costs for given business activity (product) and increase of the costs for other more profitable activities (products), reduction of sales costs and so on.

The relationship between spending and corporate crisis can be defined as a two-way relationship which requires that the management of company has to manifest flexibility in costs management. It is possible that external circumstances cause a crisis in the company which requires a corresponding reduction of costs. At the same time there could be a risk of crisis because of poor cost management. Regardless of the causal factors, "a corporate crisis occurs when the revenues of an organization are not sufficient to cover its costs and it starts to consume the savings, which ultimately will lead to bankruptcy" [7].

To achieve an effective development of the company, the costs should be managed appropriately. In managerial science there is a widely known paradigm saying that it is possible to manage only what can be measured and controlled. Costs as an object of accounting and research fully meet this key model. But the effective management of costs requires the establishment of a good corporate procedure for their accounting and most notably for their comprehensive and profound analysis - based on numerous schemes for systematization and models of functional relationships between costs and other economic factors. By applying appropriate analitical tools (including various methods and approaches) the accounting analysis makes it possible.

Viewed generally, the costs can be studied in two aspects [8]:

– as a result of consumption of material, labor and financial resources, i.e. they are determined by the ongoing activity of company;

– as a major factor that is determinative for the final financial result, i.e. when they are part of the basic accounting equation: F*inancial result = Revenues - Costs.*

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A clarification should be made here. In applying the referred in this paper methods for costs study, the range of studied costs is confined to explicit (obvious) costs - taking the form of actual cash payments. The other kind of costs - implied costs (relevant to so called economic profit) are alternative costs of the company from the usage of owned or leased resources and therefore they can not be measured accurately. It is important to know that only the explicit costs are subject to the accounting analysis.

2 ANALYTICAL TOOLS FOR COSTS STUDY

As already noted, to be implemented an effective cost management they need to be examined systematically and comprehensively. The set of methods for analysis of costs is determined on the base of problems and purposes which managers are faced with within the cost analysis.

Generally, accounting cost analysis aims to achieve the following:

- development of procedures to control costs and their comparing with pre-planned costs or standard fixed cost price;

- determining the sales price and profit norm that will to be achieved at certain levels of those prices.

The main questions that seek answers in the analysis of costs can be summarized as follows:

- **What is the overall condition of the costs?** In this case, an overall assessment of costs is implemented, as the changes of their absolute amounts of individual items, groups and sections of the profit and loss statement, (respectively revenues statement) are analysed. At the same time the changes of the relative share of spending by groups and specific species are determined.

- **What is the ratio between the two basic for the managerial accounting analysis categories of costs - variable and fixed?** Typical of these types of costs is that information for them is not gathered in accounting way (within the practice).

The reason for this is that there are no accounts to accumulate such data immediately. Such a fact is justified in terms of financial accounting. But for the needs of managerial accounting analysis, the splitting of cost to fixed and variable ones plays a crucial role in making appropriate management decisions.

- **What is the relationship between costs and volume of activity (also financial result) and how the ratio of costs (fixed and variable) influences the level of profit?** Answers to these questions would help management in budgeting the costs in both the short and long term.

Typical of the accounting cost analysis and in particular of the application of its analytical instruments is the usage of different research methods. Some of these methods are its inherent and some are characteristic of other scientific fields - mathematical, statistical, econometric, simulation methods. The application of an appropriate method depends on the demanded response and result within the respective analysis.

To resolve the first set of issues, namely - general condition, elements and cost structure, the following methods are recommended to be used:

- Dialectical method. This is a common method of any scientific knowledge and almost always is used for the analysis of costs, regardless of the objective. This method is based on either the induction or deduction approach. The Induction approach applied to the revenues and costs statement means that the costs analysis (revenues analysis respectively) starts from the different types of costs and goes to their total generality. In the deduction approach, the analysis is performed in the opposite direction. The dialectical method is a base for a number of other methods.
- Method of comparison. Through it, the changes of values of the considered indicators are estimated. When analyzing the revenues statement, a comparision regarding the individual costs for operating activities of the current and previous year is done. Comparison of the reporting data about given indicator could also be done for several prior periods. Such comparisons can be performed in absolute and relative form. Thus, this method identifies the change trend relating studied indicator which is valued information for the company management. For example, when budgeting the costs it is necessary that the forecast is based on trending analysis for at least five years. Costs comparison can be made between companies with same activity. Typically, the method is applied in combination with other methods.
- Method of chaining substitution. A basic method, wherein the resultative indicator and its variation are considered as a function of the impact of a set of factors. By series of replacing, the effect of every factor over the change of resultative indicators is determined. For example: when studying the costs of given company, the impact of changes of operational, financial and exceptional costs over total costs is separately monitored. The method of chaining substitution is successfully applied

when studying the indicator "costs per 100 levas of revenues." It is also possible to perform an analysis of the impact of various factors (at various levels with different degrees of aggregation) leading to deviations of this indicator.

- Method of detailisation. It develops the analysis a step further and is usually carried out in parallel with the method of deduction, the method of chaining substitution, and others. Characteristic of this method is that it establishes the influence of factors from different levels on the behavior of resultative indicator. The number of levels (i.e. the degree of detailisation of factors) depends on the specific objective demanded within the study. For example, the method of detailisation is applied to study the impact of the changes of different types of costs over the general change of all corporate costs.

The first stage of studying the fixed and variable costs is their identification. Information about costs that is gathered in accounting way (through accounts) is usually regarding specific composition of costs (for materials, salaries, depreciation, etc.) and type of activities (for primary, auxiliary, administrative, etc.). For the needs of management however, another systematization of costs is necessary and this is done in a way different to this made by accounting accounts.

For example, in carrying out an analysis through the method of the critical point, the costs are to be grouped as variable and fixed. Such a grouping is secondary and it can be realized through different approaches - accounting, mathematical (graphic), statistical, engineering.

To achieve greater accuracy in differentiating the cost as variable and fixed, it would be better to apply at least two approaches. It is relevant that the statistical data about costs cover as long past business period as possible - at least five, six years. In this regard, to implement a more realistic analysis of the dynamics of costs referred to the volume of business activity (obtaining the function of costs) it is necessary that the input data to be adjusted and transferred in a more comparable type. This is realized by eliminating the impact of price growth through the usage of an appropriate deflator. This study offers a parallel application of the following two methods:

• Method of the lowest and highest point. This is a purely accounting method whose application is relatively easy. Its essence is that it uses the margin between the two extreme values (highest and lowest) of business activity volume and cost for a given reference period. Through the obtained margins (regarding activity volume and costs) an average variable cost is calculated which is used to determine the variable costs at the highest level of activity for the studied period. The sum of fixed costs is also determined as a subtraction of the total costs at the highest level of activity with the computed variable costs at the highest level of activity. This yields a function of costs variation referred to the volume of activity.

• The method of linear regression. This method allows an overall logical and mathematical analysis and regression line plotting of the expected values of studied variables - in this case: the costs and volume of activity. The main advantage of this analysis is that it allows the calculation of assessments of the level of significance relating to the relationship between cost and volume of activity. Furthermore, it is possible to quantify the association between the two variables by subsequent correlation analysis.

This method is used to quantify the relationship between cost and volume of work done. Based on data about costs and activity volume over previous reporting periods, the linear regression allows estimating future costs depending on the amount of business activity volume. It is considered as "the most precise method of approximate presentation of the costs function for accounting purposes with its two components - variable and constant" [9].

Obtaining the functional relationship between fixed and variable costs and business activity volume is necessary prerequisite for forecasting of future costs and possibility of practical realization of the microeconomic model of the relationship "costs - activity volume-profit". Namely, by the usage of this model it is possible to get a response to the above raised group of questions - firstly, the relationship between costs, activity volume and financial result, secondly, impact of the changes of fixed and variable costs over the financial result.

- Method "Costs - Volume - Profit". By applying this method, it becomes possible to study such a key issue as the relationship between costs, business activity volume, revenues from sales of products or services, and the financial result. This is a prerequisite for effective management of the company, especially in a situation of crisis. This method is known as "break-even analysis" and helps the management when selecting the optimal solution in the short term. It is based on the theory of marginal economics and here the differentiation of costs as fixed and variable ones is of great importance. The basic equation that is used within the performance of that analysis is as follows:

$$NP = TR - TC = p.q - (a + b.q) \qquad (1)$$

where:

NP – net profit;

p – selling price per unit production;

q – volume of marketed production;

a – fixed costs

b – variable costs per unit production.

The equation (1) makes it possible to analyze the impact of variable and fixed costs on the financial result. Based on it, it is also possible to determine the critical point of sales (break-even point -BEP- q_C), where the financial result is zero, i.e.

$$pq = (a + bq) \qquad (2)$$

This method provides capability to calculate some indicators of certainty (safety zone; percentage of economic certainty; coefficient of coverage of the critical revenues; operating leverage) regarding company's activity. By their usage, the economic risk (risk of crisis situation occurrence) can be evaluated. These are indicators of utmost importance, especially when there is a risk of incurring losses.

The accounting cost analysis implemented by the model "Cost - Volume - Profit" can be supported by conducting factor analysis.

The method "Cost - Volume - Profit" has different applications. For example, it can be used in preparing company's forecast statement of revenues, which summarizes in itself the indicators regarding the volume, certainty and efficiency. Forecast statement of revenues can be used by managers to identify the impact of changes of fixed and variable costs on critical business activity volume, on indicators of certainty and hence on the financial result. Thus, managers are given the opportunity to put in place appropriate measures for reducing the costs (variable and fixed) and/or the activity volume.

Application of that method in conditions of risk and uncertainty is especially topical. In this case it includes probabilistic variables. For example, if the fixed and variable costs are considered as constants then the extent to which the business activity volume and financial result could be changed within given probability can be computed. Such a model allows the determination of: the critical sales volume within given confidence interval calculated on the basis of various confidence probabilities; probability of the financial result to be negative, positive or equal to a specific value.

In conditions of risk and uncertainty and for easier implementation of the above - mentioned method it is useful to use simulation. This is the next method which is recommended for use in solving issues of a similar nature.

- Simulation method (Monte Carlo method). Not rarely, the processes in complex technological systems cannot be described satisfactorily using pre-developed analytical models which are adapted to the respective problem. This is because many of the processes in these systems are realized in the conditions of uncertainty caused by the influence of one or more random variables. In case of two or more variables, the model becomes more complicated as to the variation of the first variable is added the variation to the second variable, etc. Such a model is a prerequisite for a complex analysis of the variables, which in turn contributes to making more reasoned management decisions. The realization of this more complex model is easily accomplished by applying simulation method. The essence of the method consists in the design and multiple realization of a logical model, the structure of which includes certain values - in this case the linear relationship between financial result, variable and fixed costs, selling price and volume of business activity. The method allows the realization of a great number of combinations of these economic parameters. It does not require a mathematical "solution" of a pre-formulated model but its "iteration", which is its main advantage. With the increase of system complexity, the efficiency of method also increases (compared to analytical methods). Practically, there are no restrictions on the model complexity. The simulation method is a reliable tool that can be used by company management for planning and forecasting of future production activities. It allows managers to choose different combinations between certain (constant) and uncertain (variable) parameters (fixed and variable costs, selling price, activity volume). In such a way, it becomes possible to achieve the desired accuracy in forecasting the resultant outcome (financial result). Simulation also provides capability to study the influence of every parameter of the model structure over the resultant outcome which is a prerequisite for an even greater refinement of obtained solutions.

The simulation approach applied to break-even analysis is a very useful tool for studying changes in fixed and variable costs and their impact on the financial result. As already mentioned, the number of model variables can be as many as the analyst considers appropriate. That leads to rather precise results.

- Method of marginal costs (analysis of marginal costs). This is another method that can be used to optimize the decisions relating to costs. Whilst the method "Costs - Volume-Profit" is used in finding the optimal solution in short term, the analysis of marginal costs is an analytical tool used for making decisions in long term.

The basis of this method is the concept about the relationship between total, average and marginal costs. What is essential here is the understanding that all three types of costs are considered as functions of the production volume, having in mind the fact that there are respective ratios between these types of costs. On the one hand, the total costs are a sum of the preceding marginal cost. On the other hand, between the average and marginal costs there are some dependencies: "If the average costs rise, the marginal costs are greater than the average ones; if the average costs are constant (without change), they are equal to the marginal costs; if the average costs decrease, the marginal costs are less than the average ones" [9].

Here, similarly to the analysis of the critical point, the dependence "Costs - Volume - Profit" is also an object of study. In this case, the relationship between these indicators is examined but most notably from the point of view of finding out the change of the magnitude of total costs, total revenues and total profit as a result of the increase of sales by unit production. Within the marginal analysis a non-linear function of the relationship "Costs - Volume-Profit" is applied, which shows that after reaching a certain high level of sales volume, the total costs start to exceed the total revenues. This model gives two critical points. According to the marginal analysis, an optimal production volume (ensuring maximum profit) is reached when the marginal revenues are equal to the marginal costs.

Marginal analysis is used to optimize the business elements on several elements - production costs, production volume, and profit rates.

CONCLUSION

Typical of Bulgarian companies is that their costs management is practically at a relatively poor level. Current economic conditions, however, force the management of business organizations to increase their efforts to accurately study and control the costs. Otherwise, they might be faced with critical situations which in turn could lead them to irreversible processes and subsequently to possible bankruptcy.

To avoid the falling into similar corporate difficulties, a systematic monitoring of costs is necessary. With the application of appropriate analytical tools for accounting analysis of costs, managers will be able to ensure their better management and as a result to achieve a better financial results.

The discussed in this paper approaches and methods for costs study belong to the group of most often used (by the accounting analysis) analytical tools to support the effective decision-making in the area of costs management.

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