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# PROFIT MANAGEMENT OF BUILDING ORGANIZATIONS BASED ON THE AUTHORIAL BREAK-EVEN CONCEPT

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**Svetlana Kostjukova**

Polotsk State University (PSU), Economics and Finance Faculty, Department of Finance and Industrial Economics, Novopolotsk, Belarus

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## **Abstract**

*An algorithm of profits control of construction companies is developed, it allows constantly and consistently to manage the process, to measure the progress of the process results, to monitor the achievement of these goals, thus increasing the profitability and productivity of work. A concept of analysis of the breakeven activity of construction organizations is suggested. Its gist is in the measuring of 2 factors: 1) time and 2) velocity of breakeven. Its practical importance lies in its application by contractors and customers in the management of the costs and profits. The economic content of the concept of "break-even activity of construction organizations" is clarified. A new feature of the classification of construction companies, depending on how fast they reach the break-even conditions is introduced. The latter allows justifying the appropriateness of the choice of the most efficient of the contractor based on the ranking of construction companies, in accordance with the proposed classification, make competent management solutions to customers to assess the effectiveness of investment in construction. A map of the perception of investors in the market positions of the contractor's construction and installation work, which allows selecting the most effective functioning.*

## **Keywords:**

*Algorithm, framework, evaluation, profit, expenses, investor, effective strength, building constructor*

## **1 INTRODUCTION**

Under the existing circumstances of the formation and development of the social market economy, it is important for the building complex to ensure the population's needs in housing, to develop social infrastructure and productive capacity. The

building complex is one of the important parts of the national economy.

The construction dynamics largely determines the growth rate of the economy as a whole, which concerns the Republic of Belarus as well (Lukashova, A. & Bryantseva, O., 2011). However, in modern conditions with the mandatory contract bidding to get a contract for building and to put up a building qualitatively, in time and with a good level of profit, civil

Address of the author:

**Svetlana Kostjukova**

 [svet222011@yandex.ru](mailto:svet222011@yandex.ru)

organizations can only do, if they build using effective cost and profit management system.

## **2 THE SITUATION IN CONSTRUCTION IN THE REPUBLIC OF BELARUS**

The current management system does not have reliable information about the real value of the object under the construction, the cost of its construction, and hence its profit. Those things do not make it possible to vary the cost of the contract reasonably.

Managing costs and profits in the context of building sites are fragmentary, specific economic goals are not put before the actual contractors and their achievements are not being monitored, which leads the process of building to unpredictable (usually negative) economic performance and low cost-effectiveness of construction and installation works. The marked problems deprive many potential contractors of lucrative contracts.

Therefore, the majority of construction companies have a precarious financial position, experiencing a shortage of working capital, more than 20% of them are unprofitable, the profitability in the sector is low and it is about 3 - 5% (Metezh, 2015) according to the article by.

One of the main reasons for this situation is the lack of methodological and analytical tools to take effective reasonable management decisions in the area of costs and profits necessary to achieve its goals and to enhance the profitability and efficiency of both building sites and the organization as a whole. It seems that the problem can be solved through the development of new analytical tools to create an efficient cost management and profit system of building organizations through the development and introduction of a new original concept of measuring time factors - T (time), and velocity - S (speed) for the analysis of their break-even activities (Kostjukova, 2017).

The foregoing determines the high relevance and practical significance of the study.

The article aims are to organize business processes of profit management of construction companies in the form of an algorithm of actions for managers, to develop new analytical tools on

the basis of the analysis of break-even of a new original activity concept by measuring the time factor - T (time), and velocity - S (speed).

## **3 METHODOLOGY AND RESEARCH METHODS**

One of the best-known and most effective tools of cost and profit management of enterprises is a break-even analysis.

The urgency of the break-even analysis (CVP-analysis from the English term "Cost-Volume-Profit Analysis", i.e., a joint analysis of costs, sales volumes, and profit), which makes it possible to trace the dependencies of business financial results on costs and production (sales), is due to its usefulness and efficiency in making rational management decisions.

It is a powerful tool for operational and strategic planning and management at the enterprise; it is an important part of evaluating the profitability of the company absolutely for all industries.

The questions dealing with the significance of the analysis of break-even in the implementation of effective management of the enterprise profit were constantly being risen, and largely resolved in the works of scientists.

Among scientists the greatest contribution to the development of the theory and practice of CVP-analysis was made by (Blank, 2007), (Daille, (2005), (Lebedev, 2012), (Savchuk, 2005), (Vahrushina, 2006), (Drury, 2002), (Folmut, 1998), (Neveshkina, 2010), (Karminsky, 2002), but these research have been useful only for industrial enterprises, and it is the reason that we would like to continue our study for construction enterprises.

The need for a break-even analysis for the construction industry is due to the compulsory holding of contract bidding for the right to build a specific object. Contract tenders are held in the form of competitive tendering.

The winner of the bidding contractors (contractor tenders) is considered to be the contractor that, according to the conclusion of the competition committee appointed by the tender's organizer, offers the best conditions. According to the result of the contract bidding, the contract price is determined.

Moreover, it is the price of the tender winner. This price level can be determined objectively with the help of effective techniques for the analysis of break-even activity of the building organizations.

#### **4 PROBLEM FORMULATION IN THE CONSTRUCTION**

It should be noted that in the scientific literature, analysis of break-even in the traditional sense is described in relation to industries, while the applied research, accounting for and disclosing the specifics of the breakeven analysis for construction companies, is not virtually given.

The complexity of the solution to this problem lies in the very specifics of the construction companies' operation, in the presence of the essential features inherent to the construction industry. Firstly, the long-term nature of construction projects (construction time of objects is measured in years), while the traditional break-even analysis is designed only for a short period. Secondly, at the same time, the organization is building different construction objects with different start and end dates of work during a year (it requires taking into account the share of revenue from the sale of installation and construction work (ICW), planned for development in the coming year).

Thirdly, the construction usually involves several building sites (teams) that have a direct impact on the effective implementation of the project construction and installation works, and, consequently, on the financial result of the construction company and others. The features are presented in (Kostjukova, 2014). However, this makes it impossible to use traditional break-even analysis, designed for industrial enterprises.

#### **5 THE RESULT OF THE RESEARCH**

The solution of this problem is reflected in the research. So, the author has identified and systematized distinctive features of construction industry; has developed breakeven analysis' technique for the organizations in the construction industry; break-even analysis' technique of construction projects; methods of analysis and planning break-even volume of construction and installation works of a construction organization;

has improved planning methodology and the analysis of break-even of construction companies in the context of modern legislation (Kostjukova, 2014).

In collaboration with A. Kapusto the generalization of the theory and practice of the break-even analysis in construction is fulfilled (Kapusto & Kostjukova, 2016).

The result of the research is a developed process of cost and profit management of a building organization that identifies the system (network) of organization's business processes.

#### **6 THE AUTHOR'S CONCEPT OF BREAKEVEN**

In order to make effective management decisions, the author has developed a break-even analysis technique of construction organization required to stage number 3 (indicated in Figure 1 using a gray filling).

Indeed, the most important challenge for managers of construction companies is to predict the period during which the compensation of total expenses in full will be reached, i.e. the time during which breakeven is reached.

In this case, the problem can be formulated as follows: to determine the point in time at which it can be assumed that a specific organization by the cover amount<sup>1</sup> (cover amount 1 is operating revenue difference from the sale of works and variable costs) has reimbursed payable amount of annual fixed costs in the reporting year. In this case, up to this moment, the profit is equal to zero, i.e. the entire cover amount 1, calculated to a particular object, will be directed to the reimbursement of annual fixed costs. The term of reimbursement of annual total cost represents a period of time, after which the organization starts to make a profit, in other words - for what time the organization will refund the amount of its annual total costs in full. In addition, it was found that the achievement of breakeven operations can be carried out at different speeds.

Based on the author's research and presented scientific research in order to solve these problems, the concept of the analysis of break-even activity of the building organizations using

measuring time factors - T (time), and velocity - S (speed) has been developed.

The gist of it is as follows: at the stage of planning and analysis of break-even it is necessary to consider the time factor - T (time) - the time for which the condition of breakeven operations is achieved (total contribution margin on the objects is equal to the annual permanent organization costs), and the factor of speed - S (speed) - the rate

at which the condition of break-even operations is achieved. (Kostjukova, 2017). This is due to the fact that the construction has a contractual relationship between the customer and the contractor, and, consequently, the volume of construction and installation work for each object is linked to the timing of their implementation in accordance with the DED (design and estimate documentation) and a schedule of works.

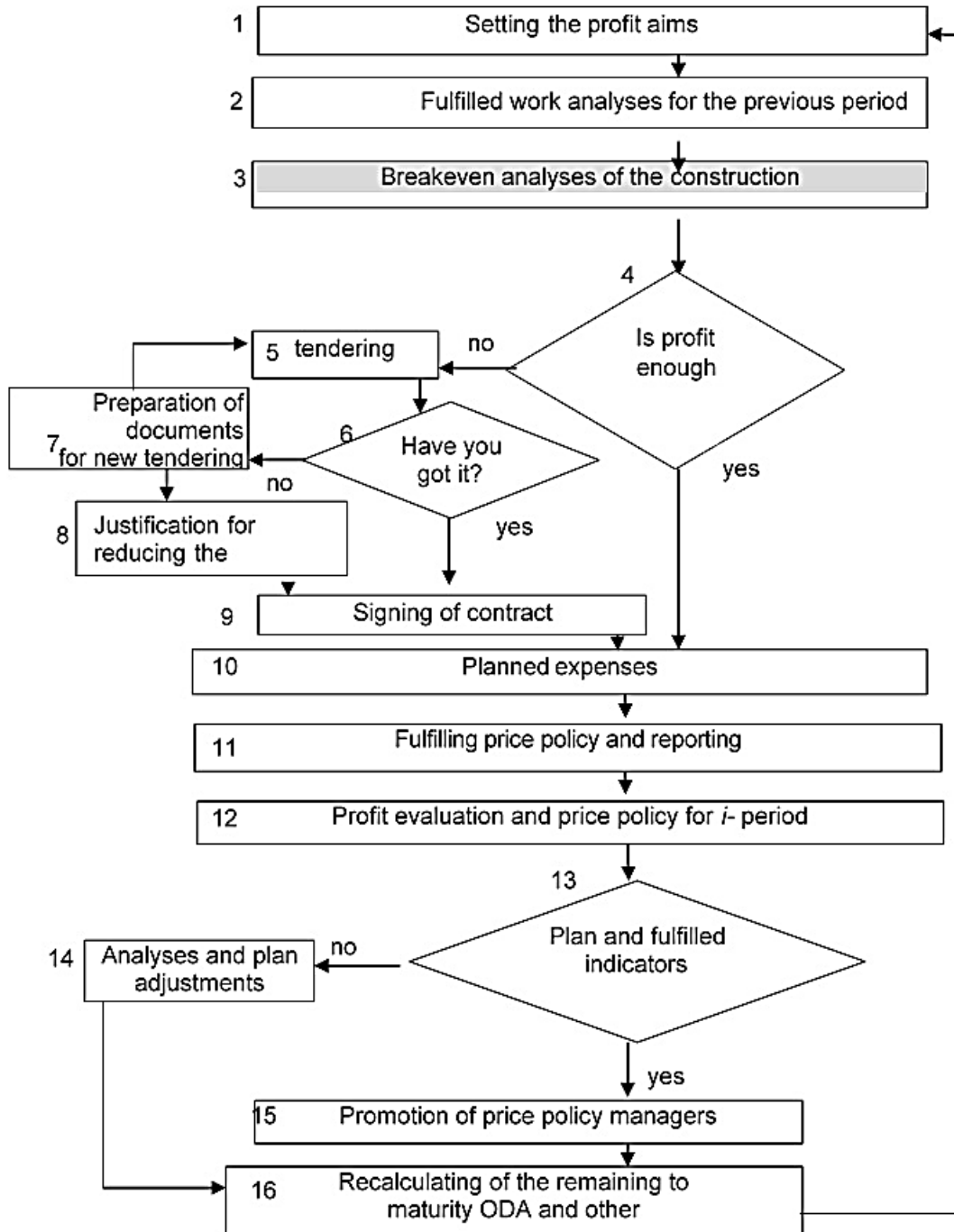


Fig. 1 Algorithm for-profit management of construction companies

Moreover, as a result of the studies, it has been found that the condition of the break-even activity of construction companies can be achieved at different speeds. There is a point of view that the construction organization with high business activity (high-security contract agreements) reaches the break-even conditions much faster. Conversely, it does it slower if its business activity is low (low supply contract agreement).

Based on the above information, a variable nature of the break-even activity index, which depends on the business activities of a construction company, is set.

Based on the developed concept it is proposed to introduce a new classification feature - the speed of achieving breakeven conditions of construction organizations. In accordance with that, it is proposed to divide the construction organizations into fast achieving, moderate achieving, slow achieving and unreachable break even during the year. (Kostjukova, 2016). The time lag during which the estimated figure corresponds to the proposed one year (Table 1).

*Table 1. Classification of construction companies on the speed they reach break-even activity*

Classification sign	Type of construction	The speed of achieving breakeven conditions
Depending on the speed of breakeven conditions	Fast achieving	1-4 months
	Moderately achieving	5-7 months
	Slow achieving	8-12months
	No achieving	More than 12 months

According to the classification proposed by the author in Table 1, fast achieving breakeven conditions company is a construction company, which is for a period of one to four months due

to the accumulated cover amount 1 can compensate for its annual fixed costs in full. Moderately achieving breakeven activity - for the period of five to seven months. Slow achieving - for 8 to 12 months, respectively. Unreachable break-even company is an organization that during the calendar year could not compensate for the annual fixed costs and, consequently, had a loss.

Thus, the proposed classification of construction companies allows investors to carry out an objective selection of the contractor in terms of speed reaching the break-even terms. It becomes apparent that the contractor that reaches condition breakeven operations, faster than the competitor - will begin to make a profit quickly. Moreover, it has sufficient capacity utilization, that corresponds to the high percentage of security outsourcing agreements.

Based on the concept of measurement T S factors, as well as the classification of construction companies the mapping of the investor's perception of break-even rate contractors activity (Figure 2) is presented.

The perception map reflects the dependence of the activity rate to break even by construction organizations depending on their security outsourcing contracts, expressed in percentage. According to the perception map (Figure 2), the company's speed breakeven is increased under the influence of the business growth of the construction company.

Presented in Figure 2 perception map, showing investor's speed to achieve contractors break-even activity, allows investors according to these limits varying parameters (break-even rate in activity correlated with security agreements contractor building the organization) to define a zone in which there is a potential contractor for the purpose of understanding and identification of its position in the construction and installation works market. Accordingly, as shown in Figure 1, favorable contractors for the conclusion of the contract are potential contractors that are in the quadrants "stable functioning" and "market leaders". It should be noted that these parameters are additional criteria except the price offered in the contract bidding to select an effective contractor.

Contract security agreements of construction organisations	high (from 61 to 100%)			Market leaders
	moderate (from 31 to 60%)		Stable Functioning	
	low (from 1 to 30%)	Market outsiders		
		Slow achieving (for 12 months)	Moderately achieving (for 7 months)	Fast achieving (for 3 months)
The dynamics of breakeven conditions achieving				

Fig. 2. Map of investor's perception of the speed of achieving break-even activity contractors

## 7 CONCLUSIONS

Based on the above it can be concluded that the introduction of the process approach to cost and profit managing of construction companies by clearly defined stages based on the developed algorithm allows constantly and consistently to manage the process, to measure progress of the process results, to monitor the achievement of their goals, thereby improving profitability and efficiency of activities both of construction sites and the organization as a whole.

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The proposed methodological tools, including profit management algorithm, a new classification of construction companies, the identification speed dial, as well as the perception of the investor card speed to achieve break-even activity contractor will allow investors (customers):

to get answers to three basic questions: when the organization, the object of investment, will reach break-even activity and, consequently, at what point in time it will start making a profit? What is its business activity? Which speed does it reach the break-even point with?

to increase the competitiveness and attractiveness of construction companies for investors by providing the latest with reports on the effectiveness of their activities, including key factors for the new break-even point - the timing and pace of activity to break even;

to create a ranking of construction companies on the timing and speed to break even, on the basis of which it is possible to draw a conclusion about the dynamics of speed in a specific period of time, in the previous periods and the prospects for the coming year;

to make informed management decisions to evaluate the effectiveness of investments in construction, which includes due date and speed to break even.

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