

CONSTRUCTION COMPANY OVERHEAD COSTS OPTIMIZATION STRATEGIES

Ala Šiškina

Kaunas University of Technologies, Kaunas, Lithuania
ala.siskina@ktu.lt

Rasa Apanavičiene

Kaunas University of Technologies, Kaunas, Lithuania
rasa.apanaviciene@ktu.lt

The dynamically growing competitiveness in the market forces construction companies to pay more attention towards the implementation of optimization strategies for reducing unreasonably high management system expenses. A relevant and innovative methodology for the evaluation of the construction company's competitiveness in terms of its overhead costs is presented. When selecting optimization strategy the relationship between the values of overhead costs and elements of business infrastructure and management system is determined by applying statistical methods. In order to optimize the expenses of construction company administration and facilities management the following strategies are analyzed: the company's real estate reorganization, shake-up of its administrative structure and the alteration of the company's management system.

KEYWORDS: overhead costs, optimization strategies.

INTRODUCTION

Recent analytical studies in business development and marketing revealed that all businesses are clearly feeling a great deal of economic pressure during the last period. The construction business in particular has been negatively impacted by the current tightening economy, so it is no surprise construction companies are interested in working with significant cost savings during these troubling times. Besides, the dynamically growing competitiveness in the market forces construction companies to pay more attention towards the implementation of optimization strategies for reducing unreasonably high expenses.

The competitiveness of a construction company can be evaluated in terms of price level and quality of supplied services, supplementary services and other factors. However, the essential factor of a construction company's competitiveness still remains to be bidding price, since it is the main criterion for the clients in selecting contractors (Zavadskas et al., 2008). The only efficient way to increase the company's competitiveness under highly intense competition in construction market with declining building contractors' profits and shrinking market shares is to control the costs of production and business.

When the company managers consider cost reduction, they frequently ask where they should start first and which costs they should target. Overhead costs are a good point to start. These costs are the fastest growing and most wasteful in many organizations. Eliminating the causes of overhead costs not only reduces costs, but also can improve quality, service, and flexibility of a company. On the other hand, cutting costs is counterproductive when it undermines the company's ability to grow and compete, or prohibits the employees of the company. Thus, a

proper evaluation of overhead costs should be made adequately according to the peculiarities of a construction company.

CONSTRUCTION COMPANY OVERHEAD COSTS

Overhead costs definition

A few commonly accepted definitions of overhead costs appear in scientific sources worldwide. One of them, more suitable for construction industry, is presented by Cilensek (1991): “Overhead costs are defined as those costs that are not a component of the actual construction work but are incurred by the contractor to support the work”. Generally, the building contractor’s overhead costs are classified in two categories: project overhead costs and company’s overhead costs (Peurifoy and Oberlander, 2002). Project overhead costs include expenses that cannot be charged directly to a particular branch of work, but are required to construct the project. Company, or so-called “general”, overhead costs are items that represent the cost of doing business and often are considered as fixed expenses that must be paid by the contractor (Dagostino and Feigenbaum, 2003).

Consequently, construction company’s overhead costs are items that represent the cost of doing business and usually are considered as fixed expenses of the company. Overhead costs represent General and Administrative (GA) functions, such as Human Resources, Finance and Accounting, Information Technology, Legal Services, Purchasing and Procurement, Facilities Management and Strategic Planning. Overhead costs of construction company directly reflect its’ management system, organization of business activities and use of available assets as well as facilities. The structure of overhead costs, adopted in Lithuania, is presented in Figure 1. The overhead costs are classified into four main categories: head office expenses (such as expenses of building facilities, clerical, utilities and proceeding taxes and fees), common use transport expenses (costs for amortization, rental and fuel, as well as taxes), salaries of head office employees and proceeded taxes.

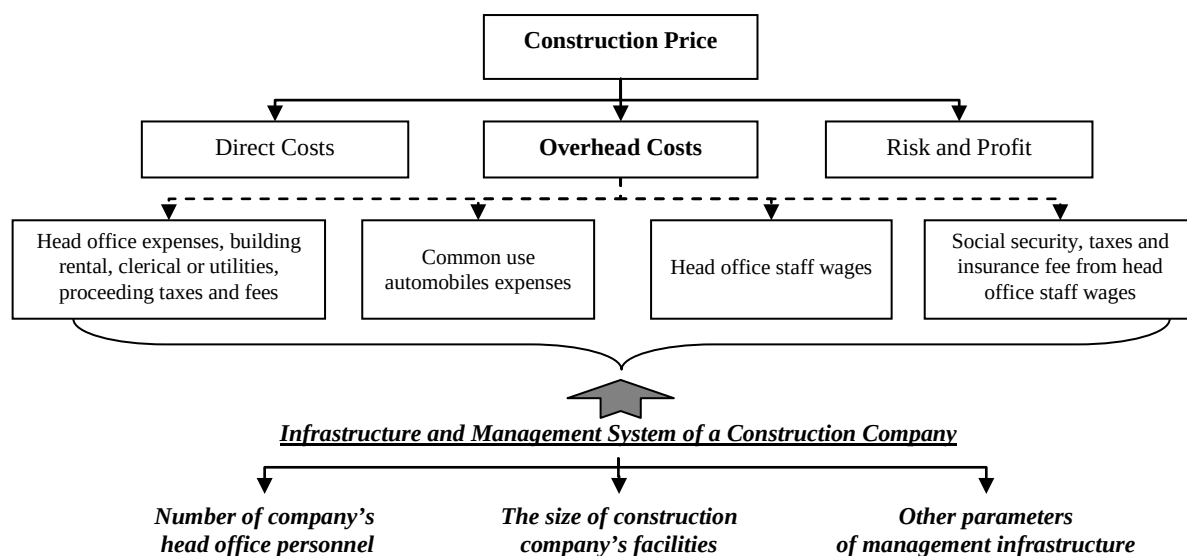


Figure 1: The structure of a construction company’s overhead costs

Since overhead costs comprise a significant part in the construction estimate, the evaluation of overhead costs is a key task for building contractors. However, the unstable construction market makes it difficult for contractors to decide on the optimum level of overhead costs that enable contractors to win public tenders and to manage large projects without financial losses (Assaf et al., 2001). Besides, if a contractor does not know his actual overhead costs, his unsuccessful effort to cover them may result in financial collapse of a construction company.

The structure of construction company overhead costs adopted in Lithuania is quite strictly defined by financial rules and construction standards; therefore, it is possible to select adequate criteria and parameters which allow analysing the construction company's competitiveness in the market in terms of its overhead costs as well as evaluating the efficiency of the company's management system. Thus three main groups of costs and these costs' centres can be distinguished:

- Administration costs, which depend on the number of head office employees;
- Expenses for the maintenance of buildings and premises, which depend on the size of buildings facilities;
- Other overhead costs, which depend on numerous factors.

Contractors need better understanding which of their processes and costs add value, and are essential for a viable business. Besides, there are opportunities to use GA functions more efficiently by trimming the operating costs around it. When the size of actual overhead costs exceeds the forecasted value, contractor can apply overhead costs optimization strategies and reduce the actual volume of costs by the influencing the costs' centres.

Overhead costs research review

Overhead costs of a company are an important research object for construction economics scientists and analysts. Relevant researches on overhead costs have been carried out for several decades; they investigate a lot of different problems related to the evaluation of the company's and project overhead costs, their allocation to different projects, specific jobs or other cost centres, actual overhead costs coverage and numerous other factors.

All research works on overhead costs evaluation can be divided into four main research trends:

- Construction contractor surveys, analysis of situation and statistical research on the understanding of the overhead costs concept as well as categorization of indirect costs, the implementation of evaluation, planning and control in practice (Holland and Hobson, 1999; Chan and Lee, 2003; Assaf et al., 2001);
- Analysis of construction delays vs. overhead costs volume (Taam and Singh, 2003);
- Analysis of the construction company's overhead costs distribution and allocation (Kim and Ballard, 2002);
- Analysis of fixed expenses recovering (Sehlhoff, 2003; Meinen, 2005).

Research papers in the first group reflect the overhead costs evaluation and management experience of construction contractors from various countries. Research in the second group involves the impact of construction project delays on the company's overhead costs refund and its operational efficiency. These scientific works are not so relevant to our research, as the next groups.

Researches in the third group involve the analysis and evaluation of company's overhead costs distribution methods and allocation techniques, which are particularly essential for large construction project management companies. Traditionally, company's overhead costs are distributed to different projects according to resource-based costing and volume-based allocation (Kim and Ballard, 2002). Several new tools (Activity-based Cost Auditing, Cause and Effect Diagrams, Pareto Analysis and Value Analysis), which may be useful to internal auditors in cost containment efforts, are explored. A further research is the development of new overhead costs allocation methods or the improvement of those already available.

The fourth group of research in the field of overhead costs involves the analysis of fixed costs evaluation and recovering. German scientific publications discuss the need for applying a market-based estimation system (Sehlhoff, 2003). The need of market-oriented practices of the enterprises is also emphasized by Lithuanian researches (Ginevičius, 2007). Current price determination methods are cost-oriented and based on the evaluation of indirect costs according to the productivity of the company. Construction companies are advised to use the so-called contribution margin accounting (break-even analysis), which provides the categorization of contractor's costs into variable and fixed, and is a very efficient tool for cost planning (Meinen, 2005).

Different researches on overhead costs investigate a lot of diverse problems related to the evaluation and allocation of overhead costs to different projects and cost drivers. But there are no systematic approach to evaluation of competitive value of company's overhead costs and implementation of different optimization strategies in regard to the position of the company in the existing market.

CONSTRUCTION COMPANY OVERHEAD COSTS OPTIMIZATION STRATEGIES

Overhead costs optimization

Construction company's overhead costs optimization strategies can be implemented to reduce the unreasonably high management system expenses and increase the competitiveness of a company. Over the past decade most global companies have implemented several restructuring methods to cut overhead costs, including business process reengineering, shared services and strategic outsourcing. Generally, the overhead costs optimization methods are as follows: the company's real estate reorganization, shake-up of its administrative structure or even the alteration of the company's management system (see Figure 2).

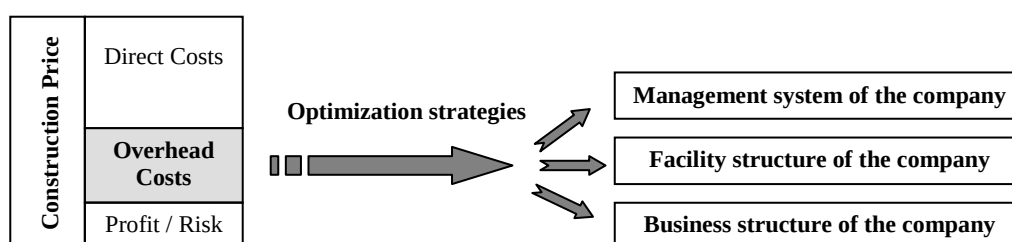


Figure 2: Strategies for optimization of construction company overhead costs

The optimization methods can be defined for each company individually, in accordance with their operational conditions and other important factors. The management system of a company, its structure as well as administrative costs can be reduced through company reorganization or restructurization strategies. Selection of the proper strategy and its implementation in the company is a hard task, which resolution in most cases involves the engagement of strategic management professionals. Usually, a new management system is created, which is transparent and comprehensible to all employees of the company. After the audit of administration operations is carried out new structural possibilities of operation are assessed (Couto et al., 2007), such as:

- Redistribution of employee workload flow;
- Exact job assignment;
- Strong subordination and accountability;
- Disestablishment of some particular job positions, replacing them with outsourcing;
- Attraction of high qualification professionals; other strategic solutions.

When minimizing the overhead costs, first of all companies should consider the possibility to cut advertising and research costs before anything else as they can be reduced almost immediately. Outsourcing of services and sharing services are two frequently applied models for cutting overhead costs due to redesigning of business processes of a company. A shared service model is seen as another way to reduce overhead costs. Some of the greatest long-term gains in operational efficiency are achieved when construction companies reengineer business processes to fundamentally change work process. Redesigning of business processes eliminates unnecessary works and usually allows a company to reduce the number of employees significantly. The largest expenses of a company used to be related to the company's employees. Companies can save a lot on overhead costs by reducing the number of people employed, cutting back on staff hours and putting restrictions on overtime. Although company managers should be aware that such measures in some cases can negatively influence productivity and morale of employees.

In order to reduce the building facilities' costs the reduction of owned real property is essential. For the task to be implemented, several strategies can be applied:

- Acquisition of new, smaller accommodation or rent of the accommodation owned to outsiders;
- Discarding separate technical departments and outsourcing;
- Sharing the infrastructure with other companies;
- Reduction of energy expenses;
- Audit and discarding of equipment and vehicles not used on a regular basis, due to reducing the auxiliary premises and other measures.

Reevaluating facilities is the first step in reducing the overhead costs caused by the real property owned. The construction companies should not get a space that is more than they need, or they will have unnecessary spending on unused space. Another way to reduce costs is to share them through some type of office sharing arrangement. As far as utilities go, construction companies can cut overhead costs by converting to high efficient lighting, heating and cooling equipment. By renting instead of buying equipment, especially computers or specialty machinery, company can also greatly cut down on overhead costs.

In order to increase the efficiency and competitiveness of a company in construction market, various construction company overhead costs optimization strategies can be applied separately or in complex. The nature of the considered strategies implies that their selection

can be solved, for example, by the implementation of multiple criteria evaluation methods or other tools. At the same time it can be complicated to determine which overhead costs and in which extent should be reduced.

Evaluation of the competitiveness of construction company overhead costs

Usually the managers of construction companies start analysing the existing costs of the company and their drivers when they find it difficult to get new contracts or compete with other construction companies in the market. Conclusions about the exceeding size of overhead costs as well as their optimum level can be arrived by analysing the competitiveness of the company.

The analysis of the construction company's overhead costs competitive properties involves the following procedures: the analysis and evaluation of the overhead costs competitiveness limits in the market of existing construction companies; evaluation of a certain construction company overhead costs competitiveness in this market, analysis of construction company's management system and infrastructure items and selection of strategies for overhead costs optimization (see Figure 3).

The primary and most important task in determining a competitive value of a construction company's overhead costs is the analysis of overhead costs of rival companies and determination of their overhead costs limits in the market. To gather the required information a questionnaire has been prepared and a survey of construction contractors was carried out. A three-year data from 30 construction companies performing general construction work packages in the central region of Lithuania was gathered. The discussed set of companies belongs to the mid-sized company group. They employ from 20 to 250 employees, their annual volume of construction operations ranges from 0.9 to 21.8 million Lt. The management staff in the examined companies ranges from 3 to 24 employees, the size of buildings facilities is from 168 to 2000 m², and the annual overhead costs range from 1.0 to 1.36 million Lt. The size, structure and operational volume of these companies are analogous; therefore, the set of the companies responding to survey is considered to be homogenous.

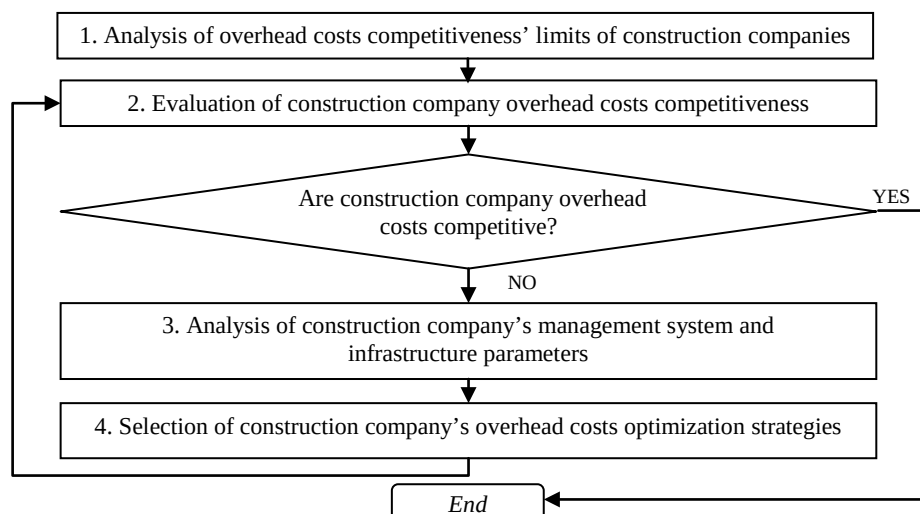


Figure 3: Evaluation of the competitiveness of construction company overhead costs

Since the value of a construction company's overhead costs reflects its management system and infrastructure, the questionnaire contained additional questions about the volume of the construction operations executed, the number of head-office employees and structure as well as size of company's realty. Therefore, in further analysis and processing of statistical data the relative values of overhead costs and their components - administration and facility management costs, were used. These relative values are obtained as portions of overhead costs or their components per unit of the executed construction volume.

To perform the analysis of the results of construction contractors' survey mathematical statistics were applied. The main statistical characteristics of relative values of overhead costs as well as their probability distributions, which are used to compare company's overhead costs with ones existing in construction market, were determined. The testing of the compatibility hypothesis about the normality of examined distributions allowed the employment of the consistent patterns of normal distribution for the evaluation of competitiveness of a construction company's overhead costs.

Thus, the competitiveness of a construction company's overhead costs is evaluated according to the distribution, gained from data analysis and given in Figure 4. When the relative value of overhead costs of examined company falls within the interval between the lowest and the average overhead costs relative values of the market, the overhead costs of that company are considered to be competitive. That means the company operates efficiently and has a rational structure of business and building facilities, as well as a proper management system. When the value falls within the interval between the average and the highest overhead costs relative values of the market, the company seems to be not competitive in terms of overhead costs. It might have an inefficient business infrastructure or inappropriate management system. In this case a reform of the company's management system and/or infrastructure by implementing specific reorganization, shake-up or other development strategies is imperative.

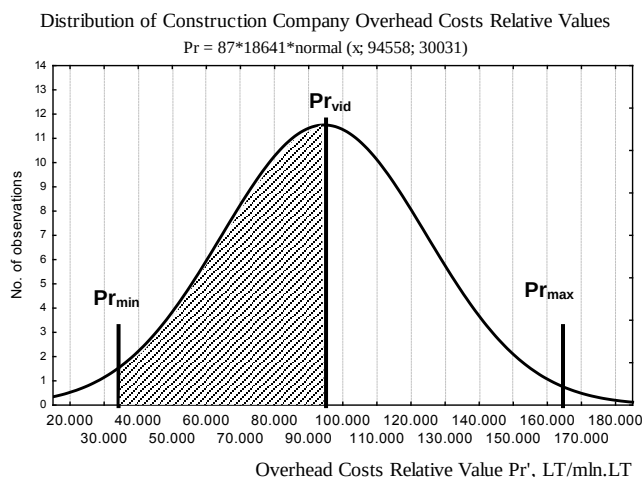


Figure 4: Distribution of construction company overhead costs relative values

The value of overhead costs is influenced by specific parameters, such as the number of head office employees or the size of facilities. The results of the construction contractor survey reveal that the amount of the other components of overhead costs is rather small compared to the administration and building facilities' costs and can be interpreted as a free member in regression equations.

After the applying of multifactor correlation-regression analysis the following equation was obtained:

$$Pr = 36107 + 14958 \cdot Sk + 197 \cdot Pl \quad (1);$$

where:

Pr - the relative value of overhead costs;

Sk - the relative value of number of head-office employees;

Pl - the relative value of building facilities' area.

The multifactor regression model of overhead costs can be applied in practice to forecast the value of construction company overhead costs. It is a convenient tool for applying different overhead costs optimization strategies as well as defining the appropriate infrastructure parameters of the company.

However, research of overhead costs competitiveness alone is often not sufficient for evaluation of a company's management efficiency; thus, a thorough and sectional analysis of overhead costs components is necessary. The statistical analysis of overhead costs' elements - administration and building facilities' costs is required.

The relative value of administrative costs is a key parameter, describing the efficiency of the business structure and management system of a construction company. The group of administration costs includes head office staff wages, social insurance taxes and administrative expenses (mail, communications, office, business trips, transport and other expenses). The competitive advantages and disadvantages of a construction company's administration costs are evaluated with the help of the same methodology as one applied for the general overhead costs of a company (see Figure 5). Relation between the number of the construction company's management staff and administration costs is determined upon the accomplishing correlation-regression analysis:

$$Adm = 30543 + 7832 \cdot Sk + 1582 \cdot DSk \quad (2);$$

where:

Adm - the relative value of administration costs;

Sk - the relative value of the number of head office employees;

DSk - the relative value of the general number of company's employees.

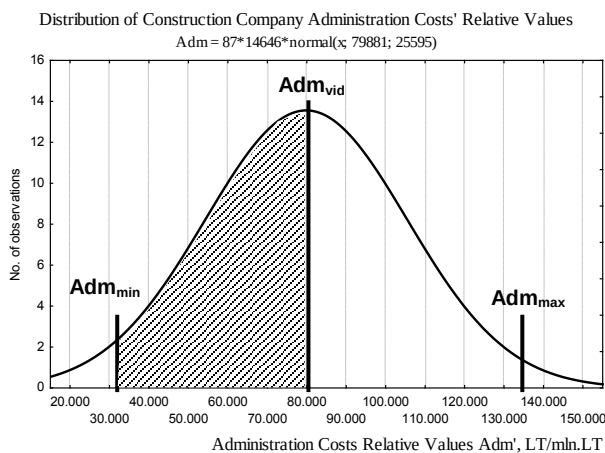


Figure 5: Distribution of construction company administration costs relative values

Another important parameter for analysing the operational efficiency of a construction company is the size of the realty owned. The buildings facilities costs consist of the following: costs for buildings amortization; exploitation and repair expenses; rent; insurance; lighting; heating; plumbing; sewage disposal; accommodation cleaning and other expenses. The relative value of buildings facilities costs is analysed in the same way as the relative values of the general overhead costs (see Figure 6). By applying the single - factor correlation-regression analysis the following dependence between the company building facilities' expenses and the area of the real estate and premises was obtained:

$$Pas = 667.69 + 17.62 \cdot Pl \quad (3);$$

where:

Pas - the relative value of buildings facilities costs.

Pl - the relative value of buildings and premises area.

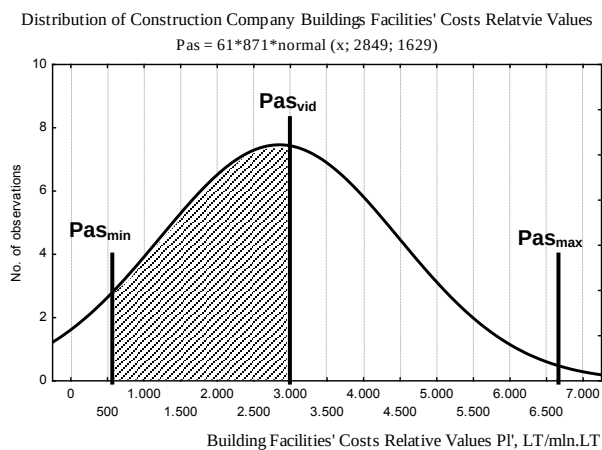


Fig. 6: Distribution of construction company building facilities' costs relative values

The evaluation of a construction company's overhead costs or their components (administration and buildings facilities costs in terms of the competitiveness in the market) poses few questions concerning the implementation of measures for increasing the competitiveness. Depending on which of the overhead costs components requires minimization, a favourable value of management system parameter is determined and adequate company development strategies are selected. Methods for the minimization of overhead costs are chosen individually for every construction company, in relevance to its actual operational conditions.

CONCLUSIONS

The article presents a relevant and innovative methodology for evaluating the competitiveness of construction company overhead costs and preliminary selection of overhead costs optimization strategies.

By applying the correlation-regression analysis the dependences between the relative values of construction company overhead costs and their components - administration and building facilities' costs, and company's infrastructure parameters - number of administration employees and buildings' area were defined. These models can be applied in practice in order

to forecast overhead expenses in accordance with different parameters of a construction company's management system and evaluate possible overhead costs optimization strategies.

The obtained regression expressions can be implemented to select an appropriate construction company overhead costs structure and to form the overhead costs optimization strategies: altering and improving company management system, building facilities and business structure.

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